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COVER ARTIST

This issue's cover and cover story is by the well-known Edmonton artist, Ludo Bogaert. Ludo is a staff artist at the Provincial Museum and Archives of Alberta.

INTERESTING ADDITION TO THE DIET OF THE SNOWY OWL?

by Ludo Bogaert
Provincial Museum, Edmonton, Alberta

As always, on trips to here or there, something interesting is to be experienced or discovered. And as with reading a book, interpreting between the lines is advisable and sometimes, like in this case, necessary. The only disadvantage is its uncertainty. You never really know if the story happened the way you think it did. Nevertheless, I don't want to keep this story for myself and will give you my version of what I think happened.

On February 7, 1977, while snowshoeing for several hours on and around Big Lake, my trail led me to the place where the Sturgeon River enters the lake. Swishing along on the crusty snow, I recalled an old stump several hundred yards ahead. Earlier, near the end of December, I had several times observed a migrating Snowy Owl perched on this stump and, now, thought to have a second look at it. I located the stump and to my surprise the disappearing snow had uncovered a huge owl pellet about 5½" long and 2" in diameter: a wet mass of hair and tiny bones. With a stick, I broke the pellet free and looked at it more carefully. Something caught my eye. A piece of bone, obviously not mammalian, stuck out of the hairy mass. Excitedly, I poked at it and recognized it as being the upper beak from a bird of prey. Looking further, the shape of a complete raptorial foot (talons and all) could be made out. At this point I decided to take the whole works home and find out more about it.

By dissolving the pellet in lukewarm water, all the larger bones, the shafts of primaries, the clawed foot, etc., were picked out with a pair of tweezers and left to dry. By now it was obvious to me that the owl which had disgorged this pellet had caught something other than Meadow voles and by the looks of it I was almost certain of the identity of the prey (a Short-eared Owl?). Examining and comparing with the bone collection at the Provincial Museum confirmed my guess, it was a Short-eared Owl, indeed.

Now, the uncertainty. What makes me say it was a Snowy Owl that killed the Short-eared Owl? Great Horned Owls also occupy this area and they are well known to feed on a great variety of prey-species, including owls and hawks. Let's consider the clues and facts, as a rule the Great Horned Owl hunts the more wooded areas. The Snowy, however, likes to perch on the ground or close to it (not considering telephone poles etc.); the Great Horned Owl prefers higher places, trees, poles, etc.

In this case I had seen a Snowy Owl perched on the very same stump. The fact that Snowies are diurnal hunters and hunt until dusk, while Short-eared Owls start just before dusk and later, means an overlapping hunting time. Now imagine a Short-eared Owl flying low over a large snow covered field. It is naturally noticed by a Snowy Owl. The Short-eared catches a Meadow vole and starts eating it. This can take from 10 to 15 minutes, time enough for the Snowy to zero in on this feeding but stationary owl. The final events we already know. The evidence facing us here in the form of a large owl pellet with the Short-eared's remains and also three Meadow vole skulls and their bones. Discussing this find with Dick Dekker, he told me of his observations of Snowy Owls chasing Merlins with prey. Merlins, having the habit of plucking prey on fence posts, would draw the attention of the Snowy. Dick noticed a change in the Merlins behaviour. They started plucking on the ground and as a result are less easily detected. Of coure, the Merlin outflies the Snowy Owl but it substantiates my idea.

The Alberta Burrowing Owl Inquiry, 1972-73

by V. Lang, RRI, Busby, Alberta;
D.V. Weseloh, Royal Ontario Museum, Toronto, Ontario;
N.G. Kondla, Parks Division, Alberta Recreation,
Parks and Wildlife, 9912 - 106 Street, Edmonton.

It has been suggested that Burrowing Owls are declining throughout their range and because little is known about this species in Alberta, Lang and Weseloh undertook to gain information through the inquiry system. In 1972, inquiries were placed with 65 newspapers from Edmonton south to the Canada - United States border. Readers were asked to contribute any information they could concerning the occurrence, nesting, and abundance (past and present) of Burrowing Owls in Alberta. Responses to this inquiry and follow-up correspondence in 1973 provide the data for this report.

Table 1 gives the bulk of the data gathered during the inquiry. The data is included in this "raw" form because the information is not available elsewhere. The responses provide varying levels of information, including about 40 nesting sites (depending on how one interprets some of the responses). Most responses were from intensively agricultural areas of the province. The data suggests a breeding distribution northwest to the Didsbury area, north to the area about 25 miles north of Hanna and south through the remainder of the province although the western limit of the breeding range south of Calgary remains undocumented over much of this apparently suitable habitat.

All reports that described nesting habitat referred to some type of pasture or native grassland. No reports of nesting in cultivated fields were received although one report of nesting in a gravel pit was forwarded. In fact, several respondents stated that cultivation was responsible for the disappearance of owls from areas that they had been seen prior to cultivation. Other reported causes of abandonment or mortality were shooting, harassment by dogs, collapse of gravel pit side, and collision with a vehicle.

Most nest sites involved single pairs. Of the reports involving more than one family, four families of owls in close proximity was the largest colony. Three to six young per nest were most frequently reported.

Nest area fidelity from year to year was variable - from one year to more than thirty years. Nineteen sites were used for only one year, nine sites were used from 2 to 5 years, two sites were used 6 to 10 years. Longer occupancy periods are relatively fewer, with one report of 14 years, 5 reports of 20 to 22 years of occupancy and three respondents indicated more than thirty years of owls in one place. These data suggest that Burrowing Owls most frequently move their nesting areas on a yearly basis but a few maintain use of traditional nest areas for many years. Records indicating occupancy for more than 10 years must be instances of very desirable habitat occupied by different birds.

Information gathered in this survey sheds little light on the present status of the owl in relation to past status. The tendency of this species to change nesting areas frequently suggests that an intensive monitoring program on a regional basis would best serve to establish population trends.

We would like to thank the following contributors: L. Akitt; E.W. Allen; L.P. Amyotte; Mrs. J.F. Appleyard; F.L. Bertschy; K. Beswick; R. Brown; E. Bruns; Mrs. Tom Chalmers; John and Rita Clarke; M. De Groot; P. Dodd; H.W. Erkamp; A. Forsch; B. Hingley; E.A. Hodgson; M. Jensen; H. Johnson; Mrs. R. Kershw; V.M. Knutson; Mrs. E. Munkholm; M. Murray; Mrs. A. Nickles; E. Owen; A.C. Paulsen; W. Reinhardt; P. Rempel; W.R. Salt; Mrs. K. Schultz; Mrs. W.L. Starch; D. Steeves; J. Stelfox; W.C. Stewart; C. Stone; Sam Stonge; C.C. Sutherland; W.R. Swanson; G. Williamson; L.E. Wilson; A.W. Zurfluh.

Table 1. Distribution and abundance data collected through the Alberta Burrowing Owl Inquiry, 1972-73

Location	Year	Observations
11-34-13-W4	1973	1 nest in community pasture
near Iddesleigh	1973	1 adult owl often at badger hole near road
7 mi. E. and 2 mi. N. of Claresholm	1972 and 1973	never seen before; family in pasture; raised 5 or 6 young in 1972, pair nesting in same location in 1973
	1973	pair of owls in sheep pasture a few hundred feet from house
near Pollockville	1972	several small bunches with 4-6 birds per bunch and one large bunch of approximately 20; living in badger and gopher holes
34-11-14-W4	1965 to 1973	at least one bird in every year on dry knoll in corner of field; about 6 young in 1972 by hole
3½ mi. SE of Didsbury along Rosebud R.	1943 to 1945	three groups of owls
6 mi. S. of Rosebud	1938	several birds around badger hole; probably family groups
near Didsbury	1972	family with 5 young in old badger hole in pasture of 70 acres; first record here

Table 1. (continued)

Location	Year	Observations
SW 18-12-23-W4	1944-1965	regularly present in pasture from 1944 to 1958, irregularly from 1958 to 1965 and none since
21-1-16-W4	1930-1950 1950-1960 1971	present nearly every year seldom seen 8 birds
35-3-5-W4	1971 1972	3 sightings of an adult at a burrow during September location checked in May but no owl
NE 19-28-1-W5	1970	nest with 3 young in large gopher hole in pasture near road.
10-14-25-W4	early 1940's until recently	nest in old badger hold in pasture
NW 18-15-20-W4	at least the past 30 years	nesting
Alderson	ca. 1966	several birds
Consort	?	several birds
SW 36-17-17-W4	1939 to ca. 1950	several families
16-21-16-W4	1946-1968	adults with young every year; several nests one year
SW 14-21-16-W4	1971	one adult in spring; vanished when land worked

Table 1. (continued)

Location	Year	Observations
SE 31-15-19-W4	1958-1971 1972	several families every year two pair nesting; in pasture
9-5-16-W4	1971(?)	2 owls in pasture
3 mi. W and 1 mi. N of Rowley	1969	nest in wall of gravel pit; one young owl saved when wall caved in
Suffield Experimental Station	1967-1970	nests in holes on edge of cutbank 30 feet from road, generally 4 or 5 young in nest
Bassano area	ca. 20 years ago	quite prolific; 2 nests 1½ mi. west of Bassano
west of Southesk	?	a number
12 mi. S.E. of Lomond	quite a few years prior to 1972	nesting in pasture
16 mi. E and 2 Mi. N. of Lethbridge	10-15 years prior to 1972	small colony in pasture; birds left when land plowed
27-27-22-W4	prior to 1972	were around every year
SW 26-6-18-W4	many years prior to 1972 1972	owls present both nesting areas unoccupied
NE 27-9-22-W4	1972	one pair

Table 1. (continued)

Location	Year	Observations
Wilson Siding 10 mi. S of Lethbridge	1964 & 1965	birds present, probably nesting
Wolf Coulee, 13 mi. NE of Carmangay	1972	3 birds in pasture
18-10-25-W4	1972 and previous years	nesting in pasture
2 mi. N. of CFB Suffield	1971	2 nest sites; several individuals at each site
6 mi. E. of Jenner	?	many birds
2 mi. NE of Tilley	ca. 1968	birds seen
in hamlet of Suffield	1972	one nesting site
6 mi. E. of Majorville	1972 and previous years	nesting birds in pasture
2 mi. E. of Majorville	1972	birds seen and one killed by car
4 mi. E and 4½ mi. S. of Taber	past 20 years	present on ungrazed native grassland
13-33-10-W4	1973	6 birds

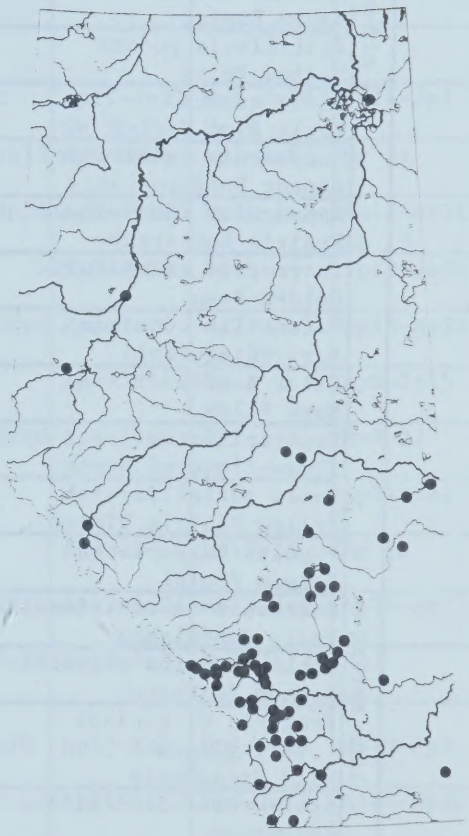
ALBERTA FLOWERING DATES IN 1977

by C.D. Bird
Department of Biology
University of Calgary

The warmest and driest spring and early summer in the five years of the FAN phenology project resulted in unusually early flowering of the key native species under study. Summaries of the results previously obtained are in the Alberta Naturalist (4: 7-14, 1974; 5: 4-23, 1975; 6: 3-27, 1976; 7: 11-29, 1977).

More individuals (180) took part in the study in 1977 than in any of the earlier years. The majority of the reports are from the southern half of the province, especially near areas of high population density. The arid prairies in the southeast and the boreal forest in the north have been sparsely covered.

Flowering dates have been sought for a group of native species with periods of bloom that commence from spring through to mid summer. One hundred species were initially under study but this number has gradually dropped to the 71 summarized herein. Deletions have occurred where experience showed that observers were hesitant of recording data for fear of making misidentifications.



The Alberta distribution of the Prairie Crocus based on 1977 phenology reports.

The following table gives observations according to the areas designated in the last two reports. The locations in each for which there are 1977 reports are (1) Waterton Lakes National Park Area - Barnaby Ridge, Belly River Campground, Cameron Lake, Red Rock Canyon, Waterton; (2) Milk River Area - Lost River, Milk River south of Etzikom, Writing-on-stone Provincial Park; (3) Cardston Area - Lee Creek, Police Outpost Provincial Park, Poll Haven Community Pasture, Smith Canyon, Woolford Provincial Park; (4) Crowsnest Pass

		Waterton Lakes National Park	Milk River Area	Cardston Area	Crowsnest Pass Area	Cypress Hills Provincial Park
mid-spring	Anemone patens var. wolfgangiana Prairie Crocus	Oc 8		Ap17-My29	My 8	Ap 9
	Populus tremuloides Aspen Poplar	Ap 24		Ap 17		
	Fritillaria pudica Yellow Bells				Ap10-My8	
late spring	Viola adunca Early Blue Violet	My 21	My21-23	My14-Jn12	My 8	
	Shepherdia canadensis Canada Buffalo-berry					
	Ranunculus rhomboideus Prairie Buttercup					
	Thermopsis rhombifolia Golden Bean	My 21	My21-29	My8-Jn22	Ap10-My8	
	Potentilla concinna Early Cinquefoil			My20-29	My 8	
	Phlox hoodii Moss Phlox	My 21	My29-Jn4	Ap 17	Ap10-My8	
	Geum triflorum Three-flowered Avens	My 21		My20-Jn12	My8-Jy8	My 7
	Viola nuttallii Yellow Prairie Violet			My25-29		My 7
	Populus balsamifera Balsam Poplar			Jn 22		
	Androsace septentrionalis Fairy Candelabra					
	Arctostaphylos uva-ursi Common Bearberry	My 21		My 20		
	Fragaria virginiana var. glauca Wild Strawberry	My21-Jy7	My21-23	My20-Jn24	Jy8-Se17	My 14
	Amelanchier alnifolia Saskatoon	My 21	My21-25	My15-Jn12	My 8	
	Viola rugulosa Western Canada Violet	Jn 30		My20-Jn12		My 14
	Disporum trachycarpum Fairy Bells					
	Smilacina stellata Star-flowered Solomon's-seal		My21-29	My29-Jn22		
	Prunus pensylvanica Pin Cherry					
	Corydalis aurea Golden Corydalis				Jy 23	
	Caltha palustris Marsh Marigold					
	Calypso bulbosa Calypso Orchid			My28-29		
	Clematis verticellaris var. columbiana Purple Clematis	Jn 30		My20-Jn22 Au 5		My 14

Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Turner Valley Area	Bow-Crow Forest Reserve	Calgary Area	Canmore Area	Drumheller Area
Ap4-19		Ap5-My20 Oc 1	My 13	Ap16-Jn28	Mr12-Jn5 Se 24	Ap5-Jn5 Se 3	Ap3-My22 Au 21
Ap4-22					Mr7-Ap28	Ap5-My4	Ap 12
Ap10-Jn14		Ap30-My20					
Ap13-My14		Ap27-Jn19 Oc 1	My 13	My3-22	Ap17-Jn12 Se 5	My1-Jn28 Oc 4	Ap26-Jn1
Ap10-My18			My 13	My10-Jn13	Ap9-My24	Ap7-Jn6	My 21
		Ap29-Jn1	My 13	Ap16-Jn26	Ap9-Jy17	My20-Jn5	Ap12-My21 Se 13
Ap10-Jn12	Jn 18	Ap13-Jn20	My13	My 10	Ap9-Jy25	Jn 5	Ap12-Jn26
Ap11-My5		Ap5-My20	My 13	Ap 16-My3	Ap6-Jn24	Ap23-Jn5 Se 19	Ap15-My22
Mr13-My20	Ap9-Jn18	Ap17-Jn1 Se25-Oc1	My 13	Jn 28	Ap4-Jn14	My 3	Ap8-Jn15
Ap25-My30	Jn 18	Ap29-Jy1	My13	Ap16-Jy10	Ap8-Jy6	My1-Jy2	My7-27
Ap24-My30		Ap24-My31	My 13		My1-Jn4		Ap24-Jn1
Ap6-22					Ap9-28	Ap12-15	Ap 12
Ap25-Jn16		Ap13-Jn19		My13-Jy24	Ap17-Au21	Ap23-Jn5	Ap25-Jn12
		Ap30-My20		My13-Jn18	Ap15-Jn9	My1-Jn18	
My1-14	Jn18-Jy19	Ap29-Jy1	My13-Jn19	My3-Se20	Ap23-Se5	My1-Se30	My19-Jy3
Ap23-My30		My2-31	My 13	My13-Jn22	Ap24-Jn12	My9-Jn18	Ap26-My22
	Jn 18	My2-Jy1	My13	Jn25-Jy17	My1-Jy9	My20-Jy15	My6-Jn1
My 10		My20-Jn19	Jn 17	My 22	My8-Jn20	My20-Jn22	My 20
My4-Jn3	Jn 18	My2-Jn19		My22-Jy10	Ap16-Jy17 Se 11	My20-Jn28	My7-27
						My21-28	My4-15
My23-27		My14-27	Jn 17	My13-Jy6	Ap20-Jy10	My4-Jy13	My10-22
				My22-Jn16		My19-Jn18	
Jn 5		My20-Jn20		My15-Jn18	Ap28-Jy9	My16-Jy2	

		Banff National Park	Red Deer Area	Rocky Mountain House Area	Wainwright-Vermilion Area	Stettler Area
mid spring	Anemone patens var. wolfgangiana Prairie Crocus	Ap30-My29 Se 19	Mr26-Jn11 Au28-Oc25	Ap 7	Ap9-My23 Se 24	Ap10-My29
	Populus tremuloides Aspen Poplar		My10-29	Ap7-My1	Ap 16	Ap8-My9
	Fritillaria pudica Yellow Bells					
late spring	Viola adunca Early Blue Violet	Ap30-Jn26	Ap25-Jy15	Ap30-Jy9 Se 19	My3-23	My2-29 Au27-Oc1
	Shepherdia canadensis Canada Buffalo-berry	Ap39-Jn19	Ap24-My12	My8-23	Ap 26	Ap18-My9
	Ranunculus rhomboideus Prairie Buttercup		Ap24-Jn11	Mr29-Jn19	Ap25-My6	Ap29-My27
	Thermopsis rhombifolia Golden Bean		Ap17-Jy15	Ap23-Jy13	Ap20-My23	Ap25-Jn7 Au 27
	Potentilla concinna Early Cinquefoil		Ap30-Jn12 Se 30	My 1		My9-29
	Phlox hoodii Moss Phlox		My 28		Jy 1	My28-29
	Geum triflorum Three-flowered Avens		My4-Jy15	Ap23-Jy9 Ap29-Oc8	My7-Jn14	My2-Jn3
	Viola nuttallii Yellow Prairie Violet					My28-29
	Populus balsamifera Balsam Poplar		My24-Jn4	Ap17-20	Ap 26	Ap23-My9
	Androsace septentrionalis Fairy Candelabra	My25-Au17	Ap30-Jn4	Ap30-Jy25		My14-Jn26
	Arctostaphylos uva-ursi Common Bearberry	Ap39-My29	Ap30-Jy15	Ap8-Jn5		
	Fragaria virginiana var. glauca Wild Strawberry	Ap30-Au23	Ap30-Jy15	My1-Oc3	My14-Jn6	My2-Jn26
	Amelanchier alnifolia Saskatoon	My24-Jn11	Ap30-Jn11	My10-Jn12	My6-22	Ap30-My21
	Viola rugulosa Western Canada Violet	My18-Jn29	My10-Jy15	My5-Au19		My28-29
	Disporum trachycarpum Fairy Bells		My4-Jn11	My14	My21-22	My28-29
	Smilacina stellata Star-flowered Solomon's-seal	My13-Jn21	My8-Jy15	My22-Jy9		My14-29
	Prunus pensylvanica Pin Cherry		My7-Jn11		My10-14	My2-16
	Corydalis aurea Golden Corydalis	Ap23-My29	My25-28	Ap8-Jy8	My 12	My28-Jn26
	Caltha palustris Marsh Marigold		My25-Jn6	Ap20-Jy27		
	Calypso bulbosa Calypso Orchid	My16-Jn21		My22-Jn19		
	Clematis verticillaris var. columbiana Purple Clematis	My17-Jn29	My7-Jn11	My9-Jy28		My2-29

Camrose Area	Jasper National Park Area	Edmonton Area	Whitecourt Area	Athabasca Area	Cold Lake Area	Peace River Area	Fort McMurray Area
Ap 16	Ap19-My8	My1-3	Ap15-My15			Ap22-My27	Ap23-Jn1
	Ap 19	Ap6-My1					
	Ap28-Jn10	Ap17-Jn5	My1-26	My1-19	My8-30	My27-28	My2-Jn3
	Ap28-My8	Ap12-My8					Ap25-My27
		Ap 18				Jn 26	
My2-Jn19		My1-Jn18				My 27	
	My 8						My 7
Jn19-Jy1	My 8					My27-Jn26	
My 1	Ap 19	Ap8-22					
My 2	My3-8	My8-28 Se 11	My1-Jn26			My 27	My 24
	Ap28-My11	Ap26-My8	My 22			My 28	My9-Jn8
My14-Jn19	My8-Jn12	Ap24-Jn14 Se 11	My1-Jn26	My1-19	My7-Jy13	My2-28	My2-Jn3 Au 29
My14-21	Jn 4	Ap29-Jn5	My 15	My1-19	My7-30	My2-28	My9-Jn3
Jn 19		My1-Jn19	My15-Jn18	My15	My10-Jy13	My28	My16-Jn3
My 21		My1-10	My 22		My14-30	My 28	My25-Jn3
My 25	Jn 12	My22-Jn14	Jn18-26		My 30	My27-28	My 27
My 21		Ap29-My20	My15-Jn26		My8-22	My16-30	My9-28
My 2	My2-Jn4	My1-8	Jn 18			My27-28	My2-30
		Ap30-Jn2	My15-Jn18	My8-15	My3-Jn20	My 28	My9-28
	My 12	My 26	My24-29			My23-29	My9-Jn12
My14-21	My 6	My1-Jn5	My 29				My 9

		Waterton Lakes National Park	Milk River Area	Cardston Area	Crowsnest Pass Area	Cypress Hills Provincial Park
late spring	Prunus virginiana var. melanocarpa Choke Cherry		My21-29	My15-Jn12	My 8	
	Cerastium arvense Field Chickweed	My21-Jy7	My29-Jn4	My25-Jn12	Jy 8	
	Penstemon nitidus Smooth Blue Beard-tongue	My 21	My21-Jn4	My15-29		
	Balsamorhiza sagittata Balsam Root	My21-Jy7		My7-Jn12	My 8	
	Maianthemum canadense var. interius Wild Lily-of-the-valley					
	Comandra pallida Pale Comandra		My29-Jn4	My29-Jy7		
	Lithospermum ruderale Woolly Gromwell	My 21		My29-Jn12	My 8	
	Zizia aptera Heart-leaved Alexanders			My25-Jn22	Jy 8	
	Mertensia paniculata Tall Lungwort				Jy 8	
	Elaeagnus commutata Wolf Willow		My21-29	Jn10-24	My 8	
	Arnica cordifolia Heart-leaved Arnica	Jn30-Jy24		Jn5-19	Jy 23	
	Lathyrus ochroleucus Yellow Pea Vine	Jy2-7		My29-Jn12	Jy 8	
early summer	Thalictrum venulosum Veiny Meadow Rue	Jy 24		My29-Jn22		
	Senecio canus Silvery Groundsel	Jy 7	My29-Jn4	Jn1-Jy21	Jy 8	
	Lonicera dioica var. glaucescens Twining Honeysuckle				Jy 23	
	Sisyrinchium montanum Blue-eyed Grass	Jn 30	My21-23	Jn5-Jy7		
	Anemone canadensis Canada Anemone					
	Linum lewisii Wild Blue Flax		My 29	Jy 7	Jy 8	
	Dryas drummondii Yellow Dryas					
	Lonicera involucrata Bracted Honeysuckle	Jn 30		Jn12-Jy1		
	Ledum groenlandicum Labrador Tea					
	Geranium viscosissimum Sticky Purple Geranium	Jn30-Jy7		Jn5-Au17	Jy 8	
	Rubus strigosus Wild Red Raspberry			Jn24-Jy7	Jy 8	
	Cornus canadensis Bunchberry				Jy8-23	

Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Turner Valley Area	Bow-Crow Forest Reserve	Calgary Area	Canmore Area	Drumheller Area
Ap23-Jn12	Jn 18	My2-Jn8	My13	Jy 10	My3-Jy17	My28-Jn14	My8-22
My5-Jn4	Jn 13	My2-Oc1	My13-Jn19	My13-Se23	My7-Se5	My20-Oc15	My6-Jy3
Ap22-Jn16		My7-Jn8	My13	Jn22-Jy10	My2-Jn20	My28-Jn14	My4-Jn12
My7-10		My7-Jn19					
Ap24-Jn16	Jn 18	My2-Jn20		Jn25-Jy17	My1-Jy9	My22-Jy2	My4-Jn12
Ap24-Jn3		My7-Jn19	My13	My13-Jy10	Ap28-Jn20	My20-Jy2	
Ap22-Jn15		My20-Jn19	Jn17-19	My13-Jy6	My7-Jy9	My1-Jy15	My19-Jy17
Jn15			Jn 17	My25-Jy17	Jn6-Jy9	My28-Jy15	
My26-Jn19		My25-Jn20	Jn 17	Jn18-Jy6	My13-Jn20	Jn1-29	My20-22
Jn 14		Jn8-19	Jn 17	Jn7-Se20	Jn11	My28-Jn18	
		My28-Jn20	Jn 17	Jn25-Jy17	My13-Jy9	My28-Jy2	My 21
		Jn8-20		Jn22-Jy24	My14-Jy1	My28-Jy2	My19-Jn2
My5-Jy1	Jn 18	My14-Jn19	My13-Jn19	Jn18-Se23	My20-Jy9	My28-Jy15	My14-Jn12
		Jn 19	Jn 17	Jn18-Jy10	My24-Au11	My28-Jy2	Jn 6
My25-Jn14		My20-Jn19	Jn 17	My14-Jy23	My10-Jy9	My25-Jy15	My22-Jn4
Jn3-10	Jy 19	My28-Jy1		Jn25	My16-Au11		My21-Jy10
My20-Jy1	Jn 18	My27-Jn20		Jn25-Au10	My19-Se18	My28-Se20	My21-Se18
				My22-Jn22		My16-Jy15	
My 10				Jn18-Jy24		My24-Jn28	
				Jn13-26		Jn 18	
Jn1-19		My20-Jy21	My13-25	Jn25-Jy10	My16-Oc1	My5-Jy15	
				Jy4-6	Jn3-11	Jn5-18	
		Jn19-Jy1	Jn 17	Jn25-Jy26		My28-Se18	

		Banff National Park	Red Deer Area	Rocky Mountain House Area	Wainwright-Vermilion Area	Stettler Area
late spring	Prunus virginiana var. melanocarpa Choke Cherry	Jn 11	My25-Jn11	My28-Jn17	My10-23	My13-29
	Cerastium arvense Field Chickweed	My17-Au23	My21-Se25	My1-Oc16	My21-Jn2	My21-Jn26
	Penstemon nitidus Smooth Blue Beard-tongue		My28-Jn4	Jn 19	Jn 17	My27-29
	Balsamorhiza sagittata Balsam Root					
	Maianthemum canadense var. interius Wild Lily-of-the-valley		Jn4-Jy15	Jn3-25		My28-Jn26
	Comandra pallida Pale Comandra	Jn 22	My4-Jy15	My14-Jn4	Jn 17	My9-Jn26
	Lithospermum ruderale Woolly Gromwell		Jn 11	My14-Jn4	My21-22	
	Zizia aptera Heart-leaved Alexanders	Jn11-15	My10-Jy15	My1-Jy13	Jy 1	My20-29
	Mertensia paniculata Tall Lungwort		Jn4-Jy15	My12-Au14		
	Elaeagnus commutata Wolf Willow	Jn11-21	My28-Jn15	Jn4-25	My 23	My24-Jn26
	Arnica cordifolia Heart-leaved Arnica	My29-Au20	My18-26	My23-Jy26		
	Lathyrus ochroleucus Yellow Pea Vine	My25-Jy12	My23-Jy15	My14-Jy31	Jn 16	My21-Jn26
early summer	Thalictrum venulosum Veiny Meadow Rue	Jn11-29	My18-Jy15	My8-Jy11		My28-Jn26
	Senecio canus Silvery Groundsel	My25-Au21	Jn1-11	My21-Au14		
	Lonicera dioica var. glaucescens Twining Honeysuckle	Jn29-Jy27	My28-Jy15	Jn7-Jy15		My28-Jn26
	Sisyrinchium montanum Blue-eyed Grass	Jn11-29	My8-Jn29	Jn3-Jy14	Jy 1	My25-Jn18
	Anemone canadensis Canada Anemone		My28-Jy15	My28-Jy23		My18-Jy23
	Linum lewisii Wild Blue Flax	Jn12-15	My28-Jy10	Jn4-Jy15		My28-29
	Dryas drummondii Yellow Dryas	Jn11-Jy17		Jn4-29		
	Lonicera involucrata Bracted Honeysuckle	My29-Au22	Jn4-Jy15	My27-Jy15		
	Ledum groenlandicum Labrador Tea	Jn11-Jy24		Jn8-25		
	Geranium viscosissimum Sticky Purple Geranium	Au 10	Jn 4	My22-Jy30		
	Rubus strigosus Wild Red Raspberry	Jn15-Au23	Jn4-Jy15	Jn3-Jy24		Jy 3
	Cornus canadensis Bunchberry	Jn15-Au23	My26-Jy15	My29-Au1		My28-29

Camrose Area	Jasper National Park Area	Edmonton Area	Whitecourt Area	Athabasca Area	Cold Lake Area	Peace River Area	Fort McMurray Area
		My1-Jn14	My15-Jn26	My1-19	My8-Jn7	My8-27	My9-Jn3
		My 11		My 22	My22-Jy20	My27-28	My27-Jn3
						Jn 26	
My21-Jn18		My22-Jn18	My22-Jn26		My30-Jn28		Jn3-19
		Jn5-14			My27-Jn20	My 27	My27-Jn11
Jn 19	Jn 4	Jn3-18	Jn 18				
My14-Jn18	Jn10-13	My12-Jn18	My23-Jn26	My 15	My10-Jn30	My18-28	Jn 1
	Jn 4	My26-Jn14				My27-28	
		Jn 11	My25-Jn18			My 28	
My21-Jn19		My17-Jn26	Jn 18		My22-Jy20	My27-30	
		My1-Jn18	My24-Jn18		Jn7-18		My 24
							My 30
My 31	Jn 12	My26-Jn18	Jn 18		My30-Jn22		My27-Jn3
My 31	Jn 4	My20-Jn19	Jn18-26		My30-Jn22	My27-Jn26	My26-Jn15
Jn5-Jy1		Jn5-26	Jn26-Jy16				My27-Jn4
	Jn 10	My 25				My27-Jn26	
	My 6						
My21-Jn11	Jn12-16	My8-Jn18	My15-23		My10-Jn7		My15-Jn16
	Jn 16	My31-Jn18	My22-Jn18		My30-Jn20		My9-Jn20
Jn 19		Jn5-Jy1					Jn 16
Jn4-19		My2-Jn26					My2-Jn25
Jn4-19	Jn12-16	My26-Jn19	My25-Jn26	Jn 19	My29-Jn22		My26-Jn25

		Waterton Lakes National Park	Milk River Area	Cardston Area	Crowsnest Pass Area	Cypress Hills Provincial Park
early summer	Galium boreale Northern Bedstraw	Jn30-Jy24		Jn12-Jy7	Jy8-23	
	Achillea millefolium ssp. lanulosa Common Yarrow	Jn30-Oc24	Jn 4	Jn10-Au17	Jy8-Se17	
	Castilleja miniata Common Red Paintbrush	Jy 7		Jn22-Au5	Jy8-23	
	Zygadenus elegans White Camas	Jy7-24	My21-23	Jy1-7		
	Oxytropis splendens Showy Locoweed	Jn30-Jy7		Jn12-Jy21	Jy 8	
	Pyrola asarifolia Common Pink Wintergreen	Jy 7			Jy 8	
	Lilium philadelphicum var. andinum Western Wood Lily					
	Hedysarum alpinum Alpine Hedysarum			Jn12-Jy21		
	Eriogonum flavum Yellow Umbrella-plant	Jn 30	My29-Jn4			
	Heracleum lanatum Cow Parsnip	Jn30-Jy24		Jy7-21	Jy 23	
	Pedicularis groenlandica Elephant Head	Jn30-Jy24				
	Linnaea borealis var. americana Twin-Flower	Jy 2			Jy8-23	
	Castilleja septentrionalis Common Yellow Paintbrush			Jy1-7	Jy 8	
	Symphoricarpos occidentalis Western Snowberry			Jy7-Au17		
	Gaillardia aristata Brown-eyed Susan	Jn30-Oc2		Jn22-Au17	Jy8-Se17	
	Campanula rotundifolia Bluebell	Jn30-Oc8		Jy7-Se12	Jy8-Se17	
	Epilobium angustifolium Common Fireweed	Jn30-Jy24		Au 5	Jy 8	
	Agoseris glauca False Dandelion	Jn30-Jy1		Jy1-Au5	Jy 8	
	Mentha arvensis var. villosa Wild Mint					
	Chrysopsis villosa Golden Aster			Jy1-Au17	Jy8-Se17	
	Grindelia squarrosa Gumweed	Au23-Oc2				
mid summer	Parnassia palustris Grass-of-Parnassus				Jy 23	
	Monarda fistulosa var. menthaefolia Wild Bergamot	Jn30-Jy7		Jy7-Au17	Jy 8	

Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Turner Valley Area	Bow-Crow Forest Reserve	Calgary Area	Canmore Area	Drumheller Area
My28-Jn19	Jn 18	Jn1-Jy21	Jn17-Au13	Jn18-Se23	My25-Au9	Jn10-Jy17	Jn1-Se13
My14-Jn19	Jn18-Jy20	Jn8-Oc1	Jn17-Au13	Jn18-Se23	My30-Oc10	Jn5-Oc20	Jn12-Oc1
Jn 4			Jn17-19	My22-Se23	Jn7-Au11	My16-Se30	
Jn19-Jy1		My28-Jy1		Jn18-Jy24	Jn3-Jy25	My28-Jy15	Jn1-8
Jy 1		Jn 19		Jn22-Au1	Jn10-Jy13	My28-Jn29	My21-Se26
		Jn 19		Jn11-Jy31	Jn10-Jy16	My28-Jy17	Jn14-Jy3
		Jn19-Jy1		Jn18-Jy17	Jn10-Jy9	My28-Jy15	Jn26-Jy3
		My7-Jn19	Jn 17	Jn22-Jy17	My13-Au9	Jn14-Jy15	
My18-Jn12	Jn 18	My27-Jn1			Jn4-Jy6	Jn20-Jy10	Jn1-Jy11
Jn3-19		Jy 1		Jn25-Jy24	Jn11-Au9	Jn9-Au15	Jn 30
				Jn25-Jy24	Jn9-Jy9	Jn5-Jy15	
		Jn19-Jy1		Jn6-Jy31	Jy 9	Jy2-15	
Jy 1		Jn8-20		Jn26-Jy24	Jn4-Jy24		Jn 8
Jn12-Jy3	Jy 20	Jn 19			Jn13-Se1	Jn28-29	Jn25-Jy15
My6-Jy1	Jn18-Jy20	Jn19-Oc1		Jn25-Se23	Jn8-Se20	Jn9-Se22	Jn12-Oc1
My29-Jn10	Jn18-Jy20	Jn20-Oc1	Se 13	Jn25-Se23	Jn10-Se18	Jn20-Oc28	Jn25-Oc1
Jy 1		Jy 21	Au 13	Jn25-Se18	Jn20-Se11	Jn25-Se12	Jn14-Au16
		My27-Oc1	Jn 19	Jn18-Se18	My25-Au9	Jn5-Au16	Jn12-26
Jy 1	Jy19-20				Jn22-Se10	Jy5-Se18	Jy11-Au17
Jn12-Se5	Jy19-20	Au8-Oc1		Jy 17	Jn3-Oc1	Jy6-Se22	Jn5-Oc1
Se 5	Jy19-20	Jy1-Se25			Jn20-Au16	Se19-Oc7	Jy26-Au16
				Jn26-Jy17	Au2-7	Jy15-Au16	
Jy 1		Jy1-Au8			Jn18-Se5	Jy15-Au21	Jy14-15

		Banff National Park	Red Deer Area	Rocky Mountain House Area	Wainwright-Vermilion Area	Stettler Area
early summer	Galium boreale Northern Bedstraw	Jn29-Au21	Jn11-Jy15	Jn8-Se2	Jn14-17	My28-Jy17
	Achillea millefolium ssp. lanulosa Common Yarrow	Jn11-Au23	Jn4-Se30	Jn13-Oc20	Jn20-Jy1	My28-Au13
	Castilleja miniata Common Red Paintbrush	My25-Au23	Au 19	Jn11-Se29		
	Zygadenus elegans White Camas	Jn29-Au23	Jy11-15	Jn25-Au20		
	Oxytropis splendens Showy Locoweed	My29-Jn21	Jn 12	Jn11-Jy31	Jn 16	My 9
	Pyrola asarifolia Common Pink Wintergreen	Jn21-Au17	Jn4-Jy15	Jn22-Jy31		Jn 26
	Lilium philadelphicum var. andinum Western Wood Lily	Jn 11	Jn11-Jy11	Jn18-Au1	Jn16-Jy2	Jn 15
	Hedysarum alpinum Alpine Hedysarum	Jn15-Au18	My25-Jy15	Jn13-Se19	Jn 17	Jn 26
	Eriogonum flavum Yellow Umbrella-plant		My29-Jn29	Jn19-Jy1	Jy 1	
	Heracleum lanatum Cow Parsnip	Jn11-Au23	Jn10-Jy15	Jn13-Au15		Jn17-26
	Pedicularis groenlandica Elephant Head	Jn11-Au20		Jn25-Jy28		
	Linnaea borealis var. americana Twin-flower	Jn21-Au23	Jn15-Jy15	Jn11-Jy15		
	Castilleja septentrionalis Common Yellow Paintbrush	Jn26-Au18		Jn4-Au20		
	Symphoricarpos occidentalis Western Snowberry		Jn27-29		Jn 17	Jn26-Au12
	Gaillardia aristata Brown-eyed Susan	My29-Au21	Jn27-Se25	Jn19-Oc10	Jn14-Jy2	Jn17-Se18
	Campanula rotundifolia Bluebell	Jy12-Au23	Jn11-Au28	Jn19-Oc8	Jy 1	Jn25-Au13
	Epilobium angustifolium Common Fireweed	Jy17-Au23	Jn27-Jy15	Jn25-Se20	Jy 1	Jn26-Au13
	Agoseris glauca False Dandelion	Jn11-Au23	Jn8-Se18	Jn17-Au20		Jn10-Jy2
	Mentha arvensis var. villosa Wild Mint	Au 3	Jn12-Jy15	Jy1-Au20	Jy 11	
	Chrysopsis villosa Golden Aster	My29-Au21	Jy11-Se30	Jy10-Oc8	Jy 1	Jn21-Au13
	Grindelia squarrosa Gumweed		Jn11-Se25			Jn26-Au27
mid summer	Parnassia palustris Grass-of-Parnassus	Jy12-Au3	Jy 17	Jn29-Au20		
	Monarda fistulosa var. menthaefolia Wild Bergamot		Jy11-15	Jy13-Au29		Jy9-17

Camrose Area	Jasper National Park Area	Edmonton Area	Whitecourt Area	Athabasca Area	Cold Lake Area	Peace River Area	Fort McMurray Area
Jn11-19	Jn 13	Jn5-26	Jn18-Jy16		Jn8-Au1	Jn 26	My28-Jn14
Jn 19	Jn 16	Jn19-Oc28	Jn26-Jy16		Jn15-Au10	Jn 26	Jn19-Au21
Jn 19	Jn 16	Jn 22	Jn 18		Jn15-Au10		
			Jn 18				
	Jn 13					My27-Jn26	
Jn18-Jy1		Jn14-26	Jn 26	Jn19-Jy10	Jn8-Jy22	Jn23-26	Jn 20
Jn 19		Jy 1	Jn26-Jy16	Jn19-Jy17	Jn15-Jy20	Jn16-26	Jn 3
Jn 19	Jn 13						
Jn19-Jy1		Jn7-Jy1	Jn18-Jy16		Jn21-Jy28		Jn 20
Jn18-Jy1		Jn2-17	My 29		Jn9-Jy14	Jn 26	Jn1-3
Jn 14			Jn 18	Jn 19			
		Jn22-Au23	Jy 16		Jn21-Jy13		
Jn 19		Jy 1	Jn26-Jy16				
	Jn 16	Se 11	Jn26-Jy16			Jn 26	My9-Jy5
Jn19-Jy1		Jn15-Au23	Jn26-Jy16		Jy13-Au10		Jn3-Au28
					Jy20-Au10		Jn 11
		Jn 21			Jy13-Au10		
		Se 11					
		Jy 12	Jn26-Jy16		Jy20-Au10		Jy 28

Area - Alison Lake, Castle Falls, Coleman, Cowley, Frank, Lundbreck; (5) Cypress Hills Area; (6) Lethbridge Area - Barons, Fort Macleod, Lethbridge, Little Bow Provincial Park, McGregor Lake, Raymond, St. Mary River, 6 Mile Coulee, Tyrrell Lake; (7) Medicine Hat Area - Jenner Ferry, Medicine Hat, Patricia, Wardlow; (8) Porcupine Hills Area - Aldersyde, Breeding Valley, Chain Lakes Provincial Park, Claresholm, High River, Nanton, Pine Coulee, Skyline Trail, Squaw Coulee, Stavely, William's Coulee, Willow Creek Provincial Park; (9) Turner Valley Area - Black Diamond, Bragg Creek, Highwood River Campsite, Longview, Millarville, Turner Valley; (10) Bow-Crow Forest Reserve - Barrier Reservoir, Bragg Creek Youth Hostel, Canyon Creek Campsite, Cataract Creek Campsite, Fortress Mountain, Highwood Pass, Highwood River, Jumping Pound Creek, Kananaskis Lakes, Marmot Basin, Meadow Creek, Mist Creek, Misty Range, Moose Mountain, Oldman River Campground, Plateau Mountain, Ribbon Creek, Sandy McNabb Campsite, Sibbald Lake, Wasootch Creek; (11) Calgary Area - Balzac, Big Hill Creek, Calgary, Carstairs, Copithorne Ridge, Crossfield, Didsbury, Ghost Reservoir, Irricana, Madden; (12) Canmore Area - Bow Valley Provincial Park, Exshaw, Harvie Heights, Heart Mountain, Jura Creek, Lac des Arcs, Mt. Allan, Seebe, Yamnuska Natural Area; (13) Drumheller Area - Beynon, Carseland, Drumheller, Hoodoos Campsite, Horseshoe Canyon, Indus, Little Fish Lake, Mossleigh, Rockyford, Rosebud, Severn Reservoir, Strathmore, Wayne; (14) Banff National Park - Banff, Boom Lake trail, Glacier Lake trail, Johnston's Canyon, Lake Louise, Moraine Lake, Mt. Coleman, Mt. Norquay, Mt. Wilson, Saskatchewan River Crossing, Temple Lodge trail, Vermilion Lakes; (15) Red Deer Area - Content Bridge, Darwell, Dry Island Buffalo Jump Provincial Park, Elnora, Innisfail, Lacombe, Morningside, Pine Lake, Red Deer, Red Lodge Provincial Park, Sunset Hills; (16) Rocky Mountain House Area - Breton, Burnt Timber Campsite, Cremona, Crimson Lake, Ghost River, James River, Keystone Hills, Kootenay Plains, Mountain Aire Lodge, Siffleur River, South Ghost River, Sundre, Sunset Pass, Waiparous Creek, Watervalley, Winfield, Ya-ha-tinda Ranch; (17) Wainwright-Vermilion Area - Grassy Lakes, Kinsella, Marwayne, Sounding Lake, Vermilion, Wainwright; (18) Stettler Area - Big Knife Provincial Park, Boss Hill, Botha, Buffalo Lake, Erskine, Mackenzie Crossing, Mirror, Rochon Sands Provincial Park, Stettler; (19) Camrose Area - Bittern Lake, Camrose, Leduc, Miquelon Lake Provincial Park, Pigeon Lake; (20) Jasper National Park Area - Hinton, Jasper, Medicine Lake; (21) Edmonton Area - Ardrossan, Beaverhill Lake, Bruderheim, Devon, Edmonton, Elk Island National Park, Glenevis, Ministik Lake, Redwater, Tofield; (22) Whitecourt Area - Carrot Creek, Fox Creek, Iosegun Lake, Little

Smoky, Taylor Lake; (23) Athabasca Area - Narrow Lake Lookout, Perryvale; (24) Cold Lake Area - 36 miles ESE of Lac La Biche ("Loon Lake"); (25) Peace River Area - Beaverlodge, Grande Prairie, Kleskun Hills, Peace River; (26) Ft. McMurray Area - Ft. Chipewyan, Ft. McKay, Ft. McMurray, GCOS Plant, Gregoire Lake Provincial Park.

The data in the previous table is based on observations made by the following individuals: Des Allen, Blain Askew, George and Marie Atkinson, Vicky Aziz, Charles and Mary Bailey, Mike Battrum, Fred Beall, Margaret Bendickson, Laura Bentley, Myrtle Biggs, the C.D. Bird family, Brad Blocksidge, Ted Blowers, Hans Boerger, John Boyle, Gloria Braun, Alan Brooks, Dan Brunton, Betty Bulmer, Dana Bush, Rudi Butot, Anna Cairns, Jim and Vanny Case, Edith Clark, Margaret Clarke, Joyce and Keith Cole, Don Conrad, John Corbin, Margaret Croucher, Elsie Cruikshank, Daphne and Sandy Denton, Don Dew, Jan Dolby, Karen Donham, Laura and Spencer Dorrans, Sue Dragon, Jim Drouin, Mariette Duez, Madelaine Dumais, Mary Dyer, Carol Fairbrother, Alison Fisher, Art Fisher, Paul Flynne, Myma Fulton, Marj Ganske, Bruce and Ruth Gordon, Ina Gotfried, E. Graff, Don and Kent Grandquist, Jean Greig, Graeme and Patricia Greenlee, Bob and Liz Hall, Beryl and Herbert Hallworth, Michael Hallworth, Helen Harris, Colin and Ruth Harrowing, Ione and Ted Hart, Eleanor Hebron, Rhonda Henderson, Loren Hettinger, Kathleen Hinkes, Bill and Percy Hills, J.R. Holman, Geoff Holroyd, Marion and Mike Horrocks, Hazel Hudson, G. Irwin, Dennis Jaques, Derek Johnson, Kathy Johnson, T. Johnston, Edith Kathol, Olivia Kent, Gordon Kerr, Andrew Klar, Jacky Knott, Doreen Kot, Dave Kraby, Martha Kruger, Heinjo Lahring, Vic Levson, Laverne Lickoch, Nora Lockerbie, Lloyd Lohr, Mary Lore, Yvonne MacAlister, Mary MacAllister, Beth MacCallum, Virginia Maitland, Monica Malenfant, N. Marten, Jean McCall, Keith and Margie McDougall, Verna McDougall, Diane and Mike McIvor, Kay Morck, Joyce Morrow, Georgia Myrick, Grace Norgard, Ruth Nyberg, Marg and Tom Oliver, Linda Olson, Pauline Olthof, Cathy Osborne, Sharon Ouwerkerk, Orval Pall, Mr. & Mrs. Paulson, Myrna Pearman, Jim Pedlar, George Pegg, Harold Pinel, David Polasek, Robina Polet, Jim and Mary Helen Posey, John Powell, Ellen Purdmaa, Ron Quaife, John Riddell, Peggy Riotte, Chris Sander, Ellen and Ron Sangster, Dianne Schmitz, Fred Schutz, Susan Senior, Keith and Shirley Shaw, Moira Sheehan, Steve Shigematsu, Michelle Short, Calvin Sime, L.S. Skaley, Barb Smith, Bob and Mary Smith, Eric Smith, Carol Southwood, Deirdre Spencer, Gordon Stewart, D.J. Stiles, Kathy Strong, Peggy Sullivan, Clare and Kathy (Wiebe) Tannas, Tim Toth, Bob and Chris Townsend, Robyn Usher, Hetty van Santen, Rose Veltri, Don Wales, Margaret Walker, Gayle Watson, Eric Watton, Bryne Weerstra, Marie Anne White, Maureen White, Kathleen Wilkinson, Joan Yates and C.E. Yauch.

Station	yr	Apr 10	Apr 20	Apr 30	May 10	May 20	May 31	June 10	June 20	June 30	July 10	July 20	July 31
Calgary	73	4.5	9.5	11.8	40.1	122.9	200.6	263.9	341.1	458.9	560.6	680.7	821.3
International	74	0.0	0.0	49.5	83.4	85.1	127.5	196.0	325.4	447.5	534.5	666.7	799.0
	75	0.0	0.0	7.9	20.2	73.6	122.4	199.7	263.1	351.6	500.0	633.0	763.8
	76	31.2	36.2	53.1	126.2	181.0	259.6	312.6	384.9	457.0	574.0	693.9	818.7
	77	38.5	48.4	109.1	167.1	199.6	257.6	359.6	454.0	564.1	655.6	745.3	887.3
	avg	14.8	21.8	46.3	87.4	132.4	193.5	266.4	353.7	455.8	564.9	683.9	818.0
Edmonton	73	8.9	19.0	26.7	65.0	167.8	271.1	360.0	454.5	583.8	699.3	828.7	970.8
Municipal	74	0.0	9.5	42.8	85.0	111.6	183.0	257.7	397.2	523.9	629.2	762.0	905.4
	75	0.0	5.5	29.3	71.5	140.9	214.1	310.8	402.9	511.9	683.1	826.9	969.7
	76	38.8	60.4	104.9	187.8	254.6	352.2	438.1	534.6	616.7	755.9	884.6	1016.8
	77	42.7	60.7	137.8	221.7	271.3	359.0	473.0	592.4	709.7	792.8	868.8	996.0
	avg	18.8	31.0	68.3	126.2	189.2	275.9	367.9	476.3	589.2	712.1	834.2	971.7

Table 2. Cumulative Growing Degree-days (above 5°C) since April 1 from 1973 to 1977 at two Alberta Stations.

Growing Degree-days are defined as the accumulated excess of the daily mean temperatures above 5°C. Mean temperatures prior to April 1 are not regarded as playing a significant role in the development of plants in our area. Table 2 presents information on the Growing Degree-days at Calgary and Edmonton for the last five years and also gives the average Growing Degree-days for this period. Until recently, published temperature data was given in degrees Fahrenheit and it was therefore necessary to convert these to degrees Centigrade. Data is given only for Calgary and Edmonton as it is not yet available for other Alberta Stations.

Growing Degree-day information provides an excellent means of determining the progress of a particular growing season. It, of course, should parallel phenological information and does as can be seen by a comparison of the average figures and that of 1977 with similar data in Table 3. Such a comparison clearly indicates that temperature is the major factor that is involved. Theoretically, one should be able to compute the number of Growing Degree-days necessary for the flowering of a given species under average conditions.

A major practical problem involved with the use of Growing Degree-day information is that Degree-days can be computed only after local temperature data has been published. This now takes at least a year. Flowering dates, on the other hand, are easily obtained and give an "instant" reading of seasonal progress.

One of the purposes of the phenology project is that of obtaining long term average flowering dates for each of the key species in each of the reporting areas. The data obtained so far

	Lethbridge Area	Calgary Area	Canmore Area	Red Deer Area	Stettler Area	Edmonton Area
Prairie Crocus 77	Ap 4	Mr 12	Ap 5	Mr 26	Ap 10	My 1
5 yr. avg.	Ap 14	Ap 1	Ap 17	Ap 14	Ap 17	Ap 16
Aspen 77	Ap 4	Mr 7	Ap 5	My 10	Ap 8	Ap 6
5 yr. avg.	Ap 4	Ap 6	Ap 18	Ap 30	Ap 15	Ap 15
Golden Bean 77	Ap 10	Ap 9	Jn 5	Ap 17	Ap 25	My 1
5 yr. avg.	Ap 20	Ap 25	My 11	My 13	My 7	My 8
Saskatoon 77	Ap 23	Ap 24	My 9	Ap 30	Ap 30	Ap 29
5 yr. avg.	My 8	My 8	My 23	My 22	My 17	My 16
Choke Cherry 77	Ap 23	My 3	My 28	My 25	My 13	My 1
5 yr. avg.	My 21	My 23	Jn 6	My 30	My 26	My 20
Yellow Pea Vine 77	-	My 13	My 28	My 23	My 21	My 17
5 yr. avg.	Jn 4	My 31	Jn 3	Jn 4	My 31	My 28
Northern Bedstraw 77	My 28	My 25	Jn 10	Jn 11	My 28	Jn 5
5 yr. avg.	Jn 16	My 19	Jn 12	Jn 15	Jn 7	Jn 13
Common Yarrow 77	My 14	My 30	Jn 5	Jn 4	My 28	Jn 19
5 yr. avg.	My 29	Jn 5	Jn 18	Jn 17	Jn 10	Jn 24
Western Wood Lily 77	-	Jn 10	My 28	Jn 11	Jn 15	Jy 1
5 yr. avg.	-	Jn 19	Jn 16	Jn 24	Jn 25	Jn 29
Brown-eyed Susan 77	My 6	Jn 8	Jn 9	Jn 27	Jn 17	Jy 1
5 yr. avg.	Jn 6	Jn 16	Jn 19	Jn 29	Jn 26	Jy 13

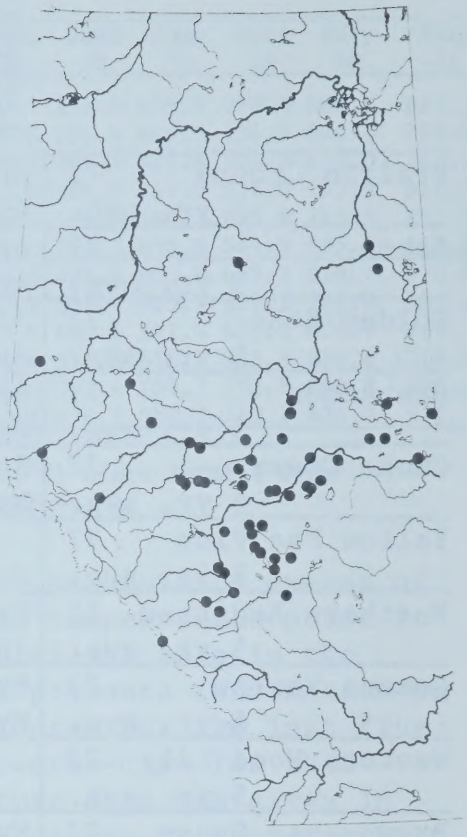
Table 3. 1977 and 5 year average (1973-1977) first flowering dates for 10 species in a selected group of Alberta areas.

is variable in value. Reports have been few in some areas and must therefore be interpreted with caution while the data in other areas is extensive enough to allow considerable analysis. Table 3 gives some of the most trustworthy findings. It presents data for the areas for which we have most reports and lists species which appear to yield especially useful information. The five year average first flowering dates enable one to look at the dates for a given year and accurately interpret the earliness or lateness of flowering in that year. The Table shows, for example, that 1977 was consistently early in all of the areas and that this held true from spring into summer.

In addition to flowering dates, the accumulated phenology data forms provide a mass of useful biological data. A person interested in the flora of a given area can search out forms pertaining to it

and then compile a list. Observers often add the names of plants seen but which are not mentioned on the forms thus making additional information available. It is also possible to map the Alberta distribution of the key species by searching through the files. The map of the Marsh Marigold was put together in this way. It, of course, is partially a map of where observers have been and, while quite accurate in central Alberta, does not give a true picture of where the plant occurs in the northern third of the province.

Your help is needed in 1978 if the project is to again be a success. Field trip reporting forms are available for those visiting areas only once or just a few times. Area forms have been prepared for country dwellers and those visiting a particular area on several occasions. Filling out forms is one of the best ways to get to know your plants. Help in identification, forms and instructions can be obtained from the writer.



The Alberta distribution of the Marsh Marigold based on 1973-77 phenology reports.

The project was financed by the Federation of Alberta Naturalists and by the writer's National Research Council of Canada operating grant.

OVERHEARD (67)

Nature's Genius

"I have long been convinced that there is nothing man-made that does not already exist in nature."

Philip S. Callahan, 1975.
"Tuning in to nature."

BOHEMIAN WAXWINGS FLYCATCHING - IN FEBRUARY

by Martin K. McNicholl
Department of Biological Sciences,
Brock University, St. Catharines, Ontario L2S 3A1.

Flycatching is a foraging technique commonly practiced by many passerine birds, especially those of certain families, of which the Tyrant Flycatchers (Tyrranidae) and Wood Warblers (Parulidae) will be most familiar to Alberta observers. Many species not specializing in this behaviour also use it on occasion (e.g. see McNicholl 1967, 1977 and references therein). Although waxwings do not come to mind readily as flycatchers, both Cedar Waxwings (Bombycilla cedrorum) and Bohemian Waxwings (B. garrulus) are known to be proficient in procuring food in this manner on their nesting grounds (Thompson 1891; Bent 1950). However, although Lein (1961) observed two Bohemian Waxwings flycatching on the Souris River in southern Saskatchewan on 21 March 1961, such observations in the prairie provinces in winter must be uncommon.

On 12 February 1977 Alan Wisely and I were treated to the sight of about 75 Bohemian Waxwings hawking insects over the outflow channel below Lower Kananaskis Lake in southern Alberta. We watched the birds for about one-half hour. Some perched on a railing and sallied forth after the insects in the manner of a Tyrant Flycatcher. Others scooped insects off the surface of the water in the manner of swallows. And others pursued insects in the air, suddenly changing direction or jerking their heads about to capture their prey.

The birds were responding to an unseasonal, abundant hatch of a large Dipteran (about one-half inch long). The weather was unseasonably mild in February in Alberta, and other insects were reported hatching in Edmonton (J. Acorn in Thormin 1977). This incident was another example of the effects of a very unusual winter.

Our observation took place while we were employed by Peregrine Research and Documentation Ltd., in conducting terrestrial vertebrate surveys for the Alberta Provincial Parks Department.

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OVERHEARD (68)

"Civilized Man"

". . . the common person . . . takes life for granted and thinks he has a right to destroy anything in sight due to the fact he never had the patience to learn and read before he acts."

Mrs. M.C. Peronne, 1976
Sask. Nat. Hist. Soc. Newsletter
44: 2.

NATURALISTS' BOOKSHELF (32)

Discovering birdwatching. Jim Flegg. 1973. Shire Publications, Ltd., 12 B Temple Square, Aylesbury, Bucks., England. 99 pp. 30 p. (British Sterling).

On a recent two-week vacation in England, I discovered this excellent little introduction to birdwatching. For the price of less than one Canadian dollar, here is a useful, reasonably comprehensive guide for the beginning bird student. Most of the birds, places, and publications mentioned are British, but the principles discussed are universal.

In seven chapters, well illustrated by drawings and photographs, Flegg offers advice on optical equipment, photography, clothing, birdwatching ethics, methods of more serious study, bird house plans, and many other topics. These portions of the book would be well worth the modest price alone. In addition, one chapter serves as a mini bird-finding guide to Britain, discussing birds by habitat, and also giving addresses of various observatories.

Although not totally free of minor errors, this book is well written and makes delightful fireside reading. Thus, I recommend it for the tips contained within, as light reading, and as a handy tourist guide for birders visiting England.

Martin K. McNicholl.

OVERHEARD (69)

The Eyes of the Naturalist

"But for those who will see, there is always at least one redeeming feature . . ."

Roger Vick, 1976
"The Plant Fanciers' Guide to Wild Flowers in the Edmonton area."

PYGMY OWL DINES ON BLACK-CAPPED CHICKADEE

by Fred Schutz
R.R. #2, Bluffton, Alberta TOC OMO

I had just emerged from an area of Black Spruce swamp and was walking uphill into deciduous woodland when I heard ahead of me a number of Black-capped Chickadees (Parus atricapillus) using their severest scolding tones. I slowed my pace and moved in toward them as quietly as possible through the dead leaves underfoot.

The date was October 18 and visibility was good as all leaves had fallen from the mixed stand of aspen, balsam poplar, birch, willow, alder and an assortment of underbrush. Even so, I was almost amongst those chickadees before I spotted the object of their abuse. It was a Pygmy Owl (Glaucinium gnoma). He was perched on a limb about three meters above the ground and about six meters distant from me, and in his talons he held the limp body of a Black-capped Chickadee. With his bill he was tearing at the feathers and seemed not to have yet gotten in to the meat of his meal. He paid me not the slightest attention -- not so much as a glance my way, but appeared intent on the business at hand, which seemed to be taking considerable time. A steady stream of tiny feathers kept fluttering down until he was able to get at the meat, which he ate slowly, and in small portions.

At first, the six chickadees I could count flitting about were extremely active and vociferous, coming in one or two at a time to perch within a meter of the owl and really lambaste him with cir-ree-ree sounds that were a bit on the guttural side for chickadees. There was no mistaking the fact, even before I saw them, that they were very perturbed.

The owl took no notice of them at first, but went on with his meal. Then, as if they were finally getting to him, he flew off a short distance, carrying his prey with no apparent effort, and lit in a much higher location -- about ten meters up this time. The chickadees followed, but seemed to be losing some of their drive, and when he flew again a few minutes later, still clutching his meal,

and again lighting high in the trees, the chickadee protests were much diminished.

I had been motionless for about fifteen minutes, but now, with the woodland drama nearing its end, I walked on.

The Pygmy Owl is uncommon east of the Rockies. It is a bird of British Columbia, but a few spill over onto the Eastern Slopes and are thought to nest in Banff Park. The few that have been seen and recorded in Alberta Parkland areas have been mostly winter occurrences. Their status in Alberta has not been fully defined. (Salt. W. Ray and Jim R. Salt. 1976. The Birds of Alberta. Hurtig Publ., Edmonton).

The Pygmy Owl is the smallest owl to be found here, being even shorter than the Saw-whet Owl (Aegolius acadicus). The pygmy has a more prominent tail, is grayer in colour and has somewhat more hawk-like features, without the flat facial disc of the saw-whet. Moreover, the pygmy hunts by day, while the saw-whet is a night prowler.

Data on above episode: Location -- SE11 - 44 - 4 - W5th, app. seven miles west, two north of Bluffton. Time -- app. 1600 hours, October 18, 1977. Temperature -- app. 16° C. Sky -- partly cloudy; bright. Wind -- calm. Visibility -- excellent.

OVERHEARD (70)

What Developers "Overlook"

"the National Parks Act . . . has as its primary objective the preservation of the natural character of landscapes and resources of national parks."

Parks Canada, 1976
"Elk Island National Park
Information".

FLOWERING PATTERNS OF NATIVE PLANTS

LETHBRIDGE, 1977

by Elizabeth C. Hall,
2602 6th Ave., S., Lethbridge, Alta.

The weather patterns of 1977 in the extreme southern part of Alberta were most unusual and had a striking effect on native vegetation.

Table 1. Temperature, moisture, windspeed, comparison between 1977 and normal levels.

	Mean temp. (C°)		Total moisture (mms)		Mean windspeed (KMP)	
Month	1977	Norm.	1977	Norm.	1977	Norm.
February	3.2	-5.6	2.0	22.4	24.0	18.7
March	0.1	-5.6	41.5	22.4	21.0	19.8
April	8.3	5.3	11.2	35.8	19.4	18.9
May	11.1	10.9	30.5	51.1	21.9	18.0
June	16.9	14.9	43.5	89.4	17.7	18.2
July	17.6	18.8	14.6	45.0	16.8	14.5
August	15.0	17.6	97.8	39.4	12.1	13.8
September	11.2	12.6	37.3	37.3	12.1	15.5

(All figures are from the Dept. of Environment Meteorological Record Sheets).

The total moisture of March was two days of wet snow of 27 and 28 March. On May 10 there was a 9.3 mm. rain, the rest of the May total was scattered showers. June 7 we had 12.4 mm., and June 29 15.8 mm. Showers on July 10 and 25 accounted for 9.7 mm. The pattern changed in August: 9 mm on the 13th, 18.2 on the 19th, 17.3 on the 22nd, 21.6 on the 30th. This was 38 mm more than the previous ten-year record.

By mid-February it was 16°C., new grass had been sprouting for two weeks, the tulips were up, there were 400 Mallards below Chin Reservoir. On March 13,I counted 37 species of native plants showing new growth in the Six-Mile Coulee on the south boundary of Lethbridge west of the Community College.

The moisture of 27 and 28 March resulted in much growth, but when April and then May were so dry, the plants which had started so enthusiastically in March stopped growing and became seriously stunted.

On May 29, there were 53 species in bloom in Six-mile coulee, and two more showing color in the flower buds. The grama grass, however, had failed to grow at all, and the needle and thread grass had very little new growth except in shaded hollows.

The very dry weather reduced the flow of the Oldman River to the point where the foot of the cliffs below the University of Lethbridge, which normally plunge straight into the river, became dry, and we were able to scramble all the way along the west side. Large gravel bars were exposed in mid-stream and produced a wide variety of plants including some very unusual and unexpected ones.

The dry spell ended in August, with a heavy rain on the 13th. The response was immediate. The grama grass grew between 2"-6" in twelve days, the coulees "greened up" like spring and stayed that way well into October. By Sept. 8 the grama grass had reached full normal growth, had flowered, and set seed.

During September and October most of the native prairie plants produced new green growth; a great many which had nearly finished flowering started up again, including grindelia and chrysopsis and aster pansus, and even some of the spring flowers produced an entirely new crop of flowers. These included Phlox, hookii, anemone patens, hymenoxis acaulis and hymenoxis richardsonii.

The late flowering continued well on into a very mild and calm October. Flowering was finished at last near the end of the month, but Remembrance Day was almost shirtsleeve weather. Winter arrived with a bang on November 18.

On September 9 (Labour Day) my husband and I observed the following native species in flower, 65 in all. We started at the U of L visitor parking lot, went down the coulee walk to the river bed, and out onto the exposed gravel bars of the river. The weather was warm and sunny.

Table 2. Labour Day, Sept. 5th, 1977. Starting at U of L visitor parking lot, going down the coulee walk to the river bed, and out on

to th exposed gravel bars of the river. Observers ... Bob and Liz Hall.

Coulee: Alfalfa (medicago sativa); Yellow sweet clover (melilotis officinalis); White sweet clover (melilotus alba); Ironweed (haplopappus spinulosus); Gumweed (grindelia squarrosa); Pasture sage (artermisia frigida); Blazing star (liatris punctata); Herriott's sage (artermsia herriottii)(ludoviciana); White aster (aster pansus); Rabbitbrush (guterriezia sarothrae); Colorado rubberplant (hymenoxis richardsonii), (solidago mollis); Yellow aster (chrysopsis villosa); Annual sunflower (Helianthus annuus); Prairie mallow (sphearalcea coccinea); Sagebrush (artemisia canis); wormwood (artermisia absynthium) Dragonwort (artermisia dracunculus); Wavy-leaved thistle (cirsium undulatum); Catmint (nepeta cataria); Burdock (arctium minus); Russian thistle (salsola pestifera); Grama grass (bouteloua gracilis); Smooth aster (aster laevis); Coneflower (ratibida columnifara); White clematis (clematis ligusticifolia); Tufted daisy (erigeron caespitosa). Dry gravel bar: Sand lily (Oenothera caespitosa); Yellow sweet clover (mililotus officinalis); White sweet clover (melilotus alba); Russian thistle (salsola pestifera); Evening primrose (cenothera biennis), (mentzelia decapetala); Cleome (cleome serrulata); Black medick (medicago lupulina); Spurge (eurphorbia esula); Yellow aster (chrysopsis villosa); Smartweed (polygomum lapathifolium); Black nightshade (solanum nigrum); Night-flowering catchfly (silene noctiflora). Mud and wet sand area: Black medick (medicago lupulina); Mint (mentha arvensis); Annual sunflower (helianthus annuus); Goosefoot (chenopodium fremontii); Curly dock rumex crispus); Lamb's quarters (chenopodium alba); Creeping buttercup (ranunculus cymbalaria); Celery-leaved buttercup (ranunculus sceleratus var. multifidus); American brooklime (veronica americana); Plantain (plantago major); Sow thistle (sonchus arvensis); Smartweed (polygonum lapathifolium); Dandelion (taraxacum officinale); Willow herb (epilobium glandulosum var. macounii?); Prickly lettuce (lactuca serriola); Mentzelia (mentzelia decapetala); Canada thistle (cirsium arvensis); Leonurus (leonurus cardiaca) (confirmed by Dr. Job Kuijt, specimen of U of L herbarium); Mullein (rosette only) (verbascum thapsus); Sand lily (oenothera caespitosa); Evening primrose (oenothera biennis); Yellow sweet clover (melilotus officinale); White sweet clover (melilotus alba); Beggarticks (bidens cernua). Sandbank attached to gravel bar: Gumweed (grindelia squarrose); Licorice (glycyrrhiza lepidota); Wormwood (artemisia absynthium); Sagebrush

(artermisia canis); Dragonwort (artemisia dracunculus); Russian thistle (salsola pestifera); Bull thistle (cirsium vulgare); Goldenrod (solidago graminifolia); Black nightshade (solanum nigrum), (chrysantheum sp.); Verbena (verbena bracteata), (bassia hyssopifolia); an unidentifiable mustard loaded with baby willow-leaf cutter beetles. (Some species were so deformed in size, colour and shape as to be quite unlike their usual selves). Foxtail barley (hordeum jubatum), (beckmannia syzigache); Burreed in fruit; 3 different carex I could not identify; a purplish chenopodium I couldn't identify.

The leonurus, for those interested, is illustrated in Hitchcock's Flora of the Pacific Northwest. I had hoped to have a first for Alberta, but it seems it was once collected near Olds, and the specimen is in the U of Calgary herbarium. A few days later I found a plant of Helenium autumnale (possibly var. montanum) further downstream which had not been reported for this area before. Another curiosity due I think to the long dry year was the appearance of perennial herbs in flower right in the river bed, such biennials and perennials as the helenium and the two varieties of oenothera.

THE AMERICAN DIPPER - FELLOW OF THE WATERFALL

by David M. Ealey
Dept. of Zoology, University of Alberta,
Edmonton, Alberta.

The very first dipper that I saw was almost a blur as it dashed past me in midstream. It stopped a short distance downstream, perched on an exposed boulder and loudly scolded me with a distinctive, almost squirrel-like, chatter. I had time to distinguish a dark slate-grey bird, only a little larger than a big sparrow, with a moderately upturned tail, a peculiar habit of bobbing up and down, and a striking pair of white eyelids that gave the bird the appearance of constantly winking. The bird, flying at less than half a meter above the water, then disappeared around the nearest bend downstream.

I failed to get a second look to confirm the bird's identity, as I was ill-prepared to wade through the stream to follow it - in fact, I nearly fell off a crude bridge during the encounter! However, I saw many more that summer, and was confident I had seen an American Dipper (Cinclus mexicanus). Subsequently, I undertook a research project on dippers for my Master's thesis and spent two summers and a fall studying these fascinating birds.

The dipper is a rather unique bird in many ways. It is typically a passerine in general body shape, bill-features and foot structure. However, it is one of the few songbirds to have invaded a habitat generally considered the exclusive domain of more primitive birds, such as: ducks, sandpipers, and kingfishers. In fact, it is the only songbird that is truly aquatic. In spite of the absence of obvious adaptations, the dipper can swim under water, often dives from rocks or the surface of the water and frequently wades through water with its head completely submerged. It does these things while foraging for aquatic insects amid the rubble and gravel of a stream bed. One finds dippers almost exclusively associated with clear mountain lakes and especially, with fast-flowing mountain streams.

Upon closer examination, the aquatic adaptations of the dipper are discernible. Dense, thick plumage and a preen gland, which is 10 times the size of that of other comparably-sized songbirds, ensures an insulative, water repellent covering. The unwebbed feet are well-suited for grasping the stream substrate and do not impede the bird's movement against a current. More obscure adaptations include the development of eyes that function under water as well as in the air, and a diving physiology similar to that of larger, more familiar diving birds.

Norwegians refer to the European Dipper as "fossekall", which means "fellow of the waterfall". This is an apt description of the American Dipper too, for it is frequently found near waterfalls, and often builds its nest on an inaccessible ledge near a falls.

The purpose of my study was to examine factors which might determi the density of dippers breeding along a stream. This required that I examine a number of different aspects of the bird's natural histo such as its habitat selection and breeding behaviour, its foraging behaviour, and the nature of its territorial system. I shall discu

some of the problems associated with doing such a study and some interesting observations that should enable the curious naturalist to interpret the behaviour of dippers that they see.

In order to know how many birds there are in an area and to follow the activities of certain individuals throughout a summer, it is very valuable to have individually identifiable birds. I caught 190 dippers during my study and placed different combinations of coloured leg bands on each one. Many were banded as nestlings, while others were caught in mist nets stretched across the streams. During the breeding season, dippers maintain elongated territories, which consist of the stream and its banks; in order to determine the population size in my study area, I waded and walked along about 41 km of streams periodically throughout the study period.

The dipper's nest is a large, dome-shaped, mossy structure containing a grass cup, with a circular opening facing the stream. Their nests are usually placed on a ledge beneath an overhang above fast-flowing water. Many nests were inaccessible without ropes or ladders, and it was necessary to don a wet suit to swim through deep, cold pools to reach a few of the nests!

Despite these problems, I was able to observe some interesting aspects of dipper breeding biology. These birds arrived on the study streams (southwest of Calgary, on the Sheep River) in early April, except for a few that lived throughout the winter on an open stretch of the breeding stream. One of the overwintering dippers was colour-banded and I determined that this male bird maintained essentially the same territory as it had during the previous and subsequent breeding periods. The breeding territories were established shortly after the birds' arrivals. Of those banded birds that survived the winter and returned to the study area during my second field season, nearly all established the same breeding territories and several occupied the same nest site. Not only were dippers "faithful" to previous breeding locations, they also showed considerable fidelity towards their mates. None of the dippers was observed to exchange mates, although returning males did mate with new females to replace previous mates, which presumably had not survived the winter.

Because of the linear nature of the stream habitat, the boundaries of dipper breeding territories were relatively easy to determine. In order to find these boundaries I chased birds from adjoining

territories towards each other and watched the interaction, or I chased each pair, separately, until they would fly no further along the stream, but flew back over my head. These procedures indicated consistent boundaries, but often required walking several kilometres just to determine the limits of a single territory. The average dipper territory was 1,578 metres (5,200 feet) long.

Many of the dippers, primarily those pairs that survived the winter arrived on the study streams already paired, so I did not observe much courtship. Basically, courtship, which may begin as early as February, consists of numerous courtship flights along the watercourse. Often a male will chase a female for some time back and forth, in much the same manner as he would chase a territory intruder. It is during courtship that one may see dippers flying high over the stream, far above the usual couple of metres.

The dipper's song is a long, trilling one with complex and quite variable passages, somewhat similar to a wren's song. During courtship and territory establishment the songs are heard often. May to late summer is a period of fewer songs, but in winter you can often hear dippers singing if you station yourself next to open water on a foothills stream.

The breeding season is a long one for dippers, even though second clutches are extremely rare (I saw only one from 30 nests established). The average number of eggs laid was 4.3 and ranged from 3 to 6 eggs during my study. The eggs were laid in typical passerine fashion, one per day, with incubation beginning with the second-last egg. The incubation period was approximately 18 days, while the nestling stage usually lasted 24 to 26 days. If one considers the requirement of 10 to 14 days for nest construction or repair, then it is evident that the dippers were involved in nest-related activities for 8 to 9 weeks. This is long in comparison with other stream-dwelling, ledge-nesting passerines such as the Western Flycatcher (Empidonax difficilis) and Townsend's Solitaire (Myadestes townsendi) which have usual nesting periods of about 5 weeks. It is interesting to note that these latter two birds generally build their nests on less stable ledges on the cliff-faces than dippers. Therefore, they have an advantage over the dipper whose long nesting period would make an unstable nest ledge a precarious proposition. Not surprisingly then, dippers

were restricted to the far less abundant, stable ledges along the sides of the streams.

Woodpeckers, which also nest in holes, are thus in a comparable situation to the similarly-sized dipper with its mossy cavity and also have a long nesting period. This cavity-nesting behaviour is probably advantageous to birds with such long nestling development stages. Such birds have higher breeding success, in general, than birds which nest in open nests.

Fledgling dippers were generally fed by the adults for a few days to 2 weeks, after leaving the nest. I even saw the adult male for o territory feed one, begging fledgling from a neighbouring nest 1 kilometre upstream! Generally, however, strange juveniles were not tolerated, and I observed several adults chasing intruding or begging juveniles which were not their own.

The late summer is a period of extensive movements by juveniles, and of post-breeding moulting by the adults. During the moult, dippers exhibited another feature in common with the waterbirds by becoming flightless for a few days. Although the flightless period was not extensive as it is with waterfowl, there were definitely a few days when the adult dippers were flightless during which they hid among rocks, log-jams and beaver dams. I tried to catch several dippers during this period to band them, but they could always outrun me, or else they swam across the stream at places where I could not cross!

During my study I examined a number of other aspects of dipper biology -- foraging ecology, territorial exclusion, non-breeding dippers, and population movements -- but I remained fascinated most by their abilities to swim under water, and wade in fast currents. They are truly aquatic songbirds and an interesting component of the relatively unknown avian community of the mountain and foothill streams of the Alberta Rockies.

OVERHEARD (71)

The spring bird

"What is a finer sight than to see a wedge of geese flying overhead

in spring! Their wild calls come floating down to us, creating an urge to be free and travel with them."

Doug Gilroy, 1976
"Prairie birds in color",
p. 21.

Vignettes from Lethbridge News, N.W.T.

by Hazel Ross
1903 - 13 Ave. S., Lethbridge, Alta T1K OS3

So many local histories are being written about the early days it set me wondering how the flora and fauna were managing with the invasion of humans on the prairies. Searching the early issues of the Lethbridge News, N.W.T., there was some mention of wildlife but only when it affected the progress of settlement. Few of the pioneers had time to appreciate the aesthetic value of the environment or if they did, little was recorded in the newspaper.

As early as 1892 in the foothills the wolves were becoming a threat to rancher's cattle and hounds were imported to kill them. But this didn't work too satisfactorily and by 1894 it was estimated that at least 50% of the calves dropped were devoured by wolves. By 1895 the Government took action and a bounty was offered of $5.00 for each wolf killed and a further $3.00 could be realized from the hide, making it a profitable business. That year a total of 1,600 wolves were killed.

The buffalo as everyone knows lost ground years earlier and at Medicine Hat where the C.P.R. mainline ended, buffalo bones were being loaded as late as 1893 for fertilizer for the eastern market. Large buffalo skulls were being sold to train passengers for $20.00 to $40.00 a head and it was this year the Government enacted legislation to prevent any further killing of the remaining 200 buffalo on the prairies.

A successful garden meant good eating the next winter so there was a warning in the Lethbridge News of 1892 for all to be on the look-out for the potato beetle. How it had been introduced was a mystery but it was a real threat to a good crop.

Shooting regulations were not in effect and one can imagine by spring what a feast the migratory wild birds would make. In April 1892 a shooting expedition brought back 10 geese, 40 ducks and 2 swans. One swan weighed 31 pounds and measured 6 feet 11 inches from tip to tip.

In March 1895 a whiskey jack nest was found with three eggs in it indicating an early spring as far as the settlers were concerned.

Many prairie fires were reported and finally it was recognized much destruction was left in their wake. An Order-in-Council from the government office at Regina, N.W.T., decreed there would be a fine for setting a prairie fire in the future.

"OOPS, WHERE DID THEY GO?" - MOVEMENT AS ONE POSSIBLE ISOLATING MECHANISM BETWEEN THE HOODED MERGANZER AND COMMON GOLDENEYE

by Bill Lang,
B310 - 2 Ave., NE., Calgary, Alta.

Several years ago (April 14, 1973) I observed the apparent participation of a male Hooded Merganser (Lophodytes cucullatis) in the courtship of Common Goldeneye (Bucephala clangula) at Frank Lake, Alberta. Parties of four males and one female, and five males and one female Common Goldeneye were engaged in courtship activities. The merganzer was also displaying. Four of the eight displays of the Hooded Merganzer described by Johnsgard (Johnsgard, P.A. Handbook of Waterfowl Behavior. Ithica, New York: Cornell University Press, 1965) were readily distinguishable:

1) erecting the crest;
2) a vigorous shaking of the head from side to side with erected crest;
3) throwing the head onto the back and return to the forward position accompanied by a frog-like call; and
4) a raising of the upper part of the body from the water with wing-flapping and return.

No other merganzers were in view and the attention of the male did seem to be directed to the goldeneyes. Hybrids of the two species have been reported (Gray, A.P. Bird Hybrids - A check-list with Bibliography. Technical Communications, No. 13, Farnham Royal, Books, England: Commonwealth Agricultural Bureau, 1958).

The attention of the merganzer shifted between the four male and the five male party of goldeneyes twice during the ten-minute observation period. This shifting appeared to result from the greater swimming movement of the goldeneyes relative to the merganzer. After a series of displays, the merganzer would appear to discover that he had been left behind and move to the nearest party of goldeneyes. "Oops; where did they go" seems an apt description.

If Common Goldeneyes typically cover greater distances during courtship than Hooded Merganzers this may serve as one possible isolating mechanisms between the two species. I had hoped to follow up my observation with measures of the distance covered by the two species per unit of time during normal courtship activities. But good intentions can also be followed by "oops." Perhaps the reader can make amends.

DEDICATED ENVIRONMENTALIST DIES

by Francies Schultz, Monarch, Alberta,
and
Mary Bailey, 2302-20 Ave., S., Lethbridge Alberta.

On October 9, 1977 the cause of conservation lost a dedicated champion when Helen Schuler passed away. Helen, an active and effective force for conservation in Alberta, was the founder of the Lethbridge Naturalists Society and served as first president as well as several other offices since its inception in 1968. She was a tireless worker for the society, helping write briefs on numerous issues, writing letters for information or support, and especially in drawing new members into the organization. Her numerous contacts

with specialists throughout the province gave the society programs and information they might otherwise have missed.

Locally she championed issues including the creation of a nature reserve in the river valley, the development of a self-guided nature trail in Indian Battle Park, the designing and coordination of an environmental education programme in the Lethbridge Public School system, attempts to save Eight-Mile Lake, an alternative to draining Sterling Lake, the establishment and preservation of a restricted development area in the coulees adjacent to Lethbridge, to name a few.

Helen Schuler's most passionate concern was environmental education for children. She had great faith in youth and dedicated her energies to giving them the opportunity to experience, to study and to understand their natural world. In 1972, she initiated a trial programme in one school. The success of this resulted in expansion into all elementary schools in the city. Her initiation of this programme resulted in the Lethbridge Public School Board setting up an Ad Hoc Committee to design and coordinate a programme series of graduated field trips leading up to a full day spent in the riverbottom nature reserve. Her files contain numerous letters from children thanking her for sharing her love and knowledge of nature with them. As a result, many Lethbridge school children have been turned on to the outdoors by her influence. In recognitio of this contribution, she jointly received a Certificate of Merit from the Environment and Outdoor Education Council of the Alberta Teachers Association.

Locally she was also well known for her knowledge of birds and flowers. Residents often sought her help, with an injured bird or in identifying an unusual bird or flower. She was always generous with her knowledge and help. She also encouraged people to report rare sightings and was actively involved in validation and recording of first sightings of birds for Southern Alberta.

While very active locally, Helen was also involved at the provincial level as well. A founder of the Federation of Alberta Naturalists,

she served as first treasurer for four years and later as a director. Numerous provincial causes drew support and committment when she worked on the following issues - Master Plans for Banff, Jasper, Yoho and Kootenay and Waterton National Parks; Cypress Hills Provincial Park; ECA hearings on strip mining, pesticide use, eastern slope land use, Red Deer Dam proposals, sulphur extraction plants, etcetera; Land Use Hearings; development and preservation of wilderness areas such as Willmore, White Goat, etc., the selection of a provincial bird, numerous proposals for Banff National Park such as the Village Lake Louise and now Sunshine proposals. Always Helen became involved in the time-consuming work that is necessary when briefs must be prepared and supported (on those issues). Well known by conservationists throughout Western Canada, she was able to acquire invaluable information to support many of the proposals in these briefs.

This Saskatchewan native was a frequent contributor to the Alberta Naturalist, and for a period of time, she wrote a column for the Lethbridge Herald that was enjoyed by many in this part of the province, displaying a rare ability to make the world of nature a personal experience to be shared with others.

She held strong belief in the importance of keeping our politicians informed on various issues. Literally hundreds of letters were written to both provincial and federal civil servants and politicians to express her viewpoints, most often, on environmental issues. In addition to her dedication to keeping the power structure informed, she always encouraged other people to express themselves likewise.

Helen gave long and consistent support to any project she became involved with. For many years she faithfully contributed her bird sightings to the quarterly "Northern Great Plains" report published in American Birds. She also assisted in the expansion of the reporting by encouraging many friends and acquaintances to become contributors. In the early years of the Lethbridge Naturalists Society, she spear-headed society involvement in the Breeding Bird Survey each spring, many times travelling several routes herself to ensure complete coverage of southern Alberta.

When massive proposals were made to build an ammonia fertilizer plant in southern Alberta for export to the United States, she

worked effectively for the Committee for an Independent Canada in their opposition to the plant.

The Alberta Wilderness Association found her a willing and helpful ally in their proposals to have the Lost River area declared a Wilderness Area. The Fish and Game Association received her support on proposals to have abandoned roadways and railway rights-of-way preserved as Wildlife habitat.

Helen C.E. Schuler was born, raised and educated in Maple Creek, Saskatchewan. She passed away at 46 years of age, after a lengthy illness, from cancer. Although she endured considerable suffering during her last year she continued interested and active in environmental concerns. After receiving her nursing degree from Saskatoon, Mrs. Schuler spent a number of years in nursing instruction. She married Raymond H. Schuler. She was a loving and dedicated wife and mother, who always shared her love and respect for nature with her children Michelle, Tom, and Marina.

Always people were impressed with her positive way of attacking problems, and by her wealth of knowledge. She was very knowledgable not only about natural history, particularly birds, but about environmental issues in the western provinces. Mike Harrop of the Lethbridge Herald described her as "the single most effective voice for conservation in southern Alberta." Dorothy Broadbent, president of the Federation of Alberta Naturalists says, "she was perhaps the greatest naturalist and conservationist in this province." To all who knew her, she was a very special friend, who retained her sense of humour throughout her fight with cancer. While she will be sadly missed, her influence will be felt for many years to come.

OVERHEARD (72)

Oil Pollution

"Insufficient attention has been given by industry and government to the federal statute that "no person shall deposit or permit the deposit of oil, oil wastes or other substance harmful to migratory birds in any waters or any area frequented by migratory birds."

Alberta Environment Conservation Authority, 1975. "Review of interaction between migratory birds and Athabasca oil sands tailings ponds." p.30.

RESULTS OF THE 1977 MAY SPECIES COUNT DAY (PLANTS)

by Julie O. Hrapko, Curator of Botany,
Provincial Museum of Alberta, Edmonton, Alta.

The results of the botanical portion of the 1977, May Species Count Day have been tabulated showing the areas in latitudinal order (south to north). The counts were mostly made on May 28 and/or 29.

In 1977 289 plant species were recorded, compared with 255 reported in the 1976 count. This may mean more species were in flower in 1977, but it is more likely a reflection of a greater number of participants and better coverage.

Having participants use the 1976 species list as a plant check list made it much easier to compile the 1977 table that follows. A similar plant check list will be available for the 1978 May Species Count Day by writing to me at the Provincial Museum of Alberta, 12845-102 Avenue, Edmonton, T5N OM6.

Following is a list of the observers, totals, and other pertinent remarks for each area.

1. Police Outpost Provincial Park: Sixteen flowering plant species were recorded by Steve Shigematsu.

2. Writing-on-Stone Provincial Park: Nineteen flowering species were recorded by Harold Pinel.

3. Lethbridge: Mary Bailey and Elizabeth Hall recorded 68 species in flower at Six-mile Coulee and Nature Reserve in Indian Battle Park.

4. High River: Two members of the High River Naturalists' Society, Loren Hettinger and Charles Yauch, recorded 27 species.

5. Calgary: Three groups of observers covered three different areas in Calgary, and all the observations were combined for a total of 50 species. The observers were Mary Lore, Cathy Osborne, Eleanor Hebron, Beryl Hallworth, H. Hallworth, and D. Allen.

6. Yamnuska: The greatest number of species in flower, 137 in all, were recorded here by Keith and Joyce Cole, Mike and Diane McIvor, Dennis Jaques, Dave Kraby, Vicki Aziz, Geoff Holroyd, Mary Dyer and Alan Brooks.

7. Banff: Forty-seven species were recorded by Mike and Diane McIvor, Bruce and Ruth Gordon, Keith and Margie McDougall, and Dan Brunton.

8. Dry Island Provincial Park: Fifty-eight species were recorded by J.B. Posey, D. Wales, H. Harris, and M. Pearman.

9. Stettler & Buffalo Lake: Four areas in this region were observed by the Buffalo Lake Naturalists, for a total of 76 species. Observers were: Lloyd Lohr, Marj Ganske, Don and Kent Brandquick, Eric and Barb Smith, Margaret Croucher, Edith Clark, Virginia Maitland, and Martha Kruger.

10. Mirror: Forty-three species were recorded by C.D. Bird, A.D. Bird, Ann Bird, and Myrtle MacDonald.

11. Red Deer: M.H. Posey recorded 29 species in flower in a poplar forest on sand hills.

12. Grande Prairie: Yvonne MacAlister of the Northern Alberta Nature Club recorded 14 species in flower.

13. Beaverlodge: Thirty-four species were recorded by Georgia Myrick.

1977 SPECIES COUNT DAY: PLANTS IN FLOWER

(Nomenclature as in FLORA OF ALBERTA (E.H. Moss, 1959)

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yammuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
POLYPODIACEAE (Fern Family)															
Cystopteris fragilis	Fragile Fern						+								
Woodsia scopulina	Mountain Woodsia						+								
EQUISETACEAE (Horsetail Family)															
Equisetum arvense	Common Horsetail						+								+
E. laevigatum	Smooth Scouring Rush						+								
E. sylvaticum	Woodland Horsetail														+
SELAGINELLACEAE (Little Club-moss Family)															
Selaginella selaginoides	Spikemoss														+
PINACEAE (Pine Family)															
Juniperus communis	Ground Juniper						+								
J. horizontalis	Creeping Juniper						+								
Larix laricina	Tamarack														+
Picea glauca	White Spruce						+	+							
Pinus contorta	Lodgepole Pine						+	+							
Pseudotsuga menziesii	Douglas Fir						+	+							
JUNCAGINACEAE (Arrow-grass Family)															
Triglochin palustris	Slender Arrow-grass														+
Triglochin sp.	Arrow-grass										+				
GRAMINEAE (Grass Family)															
Bromus inermis	Awnless Brome						+							+	
Calamagrostis inexpansa	Northern Reed Grass						+								
C. rubescens	Pine Grass						+								
Elymus innovatus	Hairy Wild Rye						+								
Festuca ovina	Sheep Fescue						+								
F. scabrella	Rough Fescue						+								
Hierochloë odorata	Sweet Grass						+					+			+
Hordeum jubatum	Foxtail Barley										+				

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yamnuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
GRAMINEAE (Grass Family) continued															
Poa alpina	Alpine Bluegrass						+								
P. cusickii	Early Bluegrass						+								
P. nervosa	Wheeler's Bluegrass						+								
Poa sp.	Bluegrass				+										
Oryzopsis asperifolia	Rice Grass														+
CYPERACEAE (Sedge Family)															
Carex aquatilis	Water Sedge														+
C. atrosquama							+								
C. aurea	Golden Sedge					+	+								+
C. capillaris							+								+
C. concinna															+
C. concinnoides							+								+
C. foena															+
C. gynocrates															+
C. limosa															+
C. scirpoidea							+								+
C. stenophylla							+								
C. vaginata															+
C. xerantica							+								
Carex spp.	Sedges				+									+	
Eleocharis acicularis	Needle Spike Rush											+			
Eriophorum vaginatum	Cottongrass														+
Eriophorum sp.	Cottongrass													+	
JUNCACEAE															
Juncus balticus	Wire Rush						+								
LILIACEAE (Lily Family)															
Allium schoenoprasum	Wild Chives						+								
A. textile	Prairie Onion		+	+		+			+		+				
Disporum trachycarpum	Fairy-bells						+			+	+			+	+
Fritillaria pudica	Yellow-bell		+												
Lilium philadelphicum	Western Wood Lily						+								+

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LILIACEAE (Lily Family) continued															
Maianthemum canadense	Wild Lily-of-the-Valley								+		+				+
Smilacina racemosa	False Solomon's-seal					+	+				+	+			
S. stellata	Star-flowered Solomon's-seal		+	+	+	+	+	+	+	+	+	+	+	+	+
S. trifolia	Three-leaved Solomon's-seal										+				
Tofieldia glutinosa	False Asphodel										+				
Zygadenus elegans	White Camas						+								
Z. gramineus	Death Camas					+			+						
IRIDACEAE (Iris Family)															
Sisyrinchium montanum	Blue-eyed Grass			+		+	+				+	+		+	+
ORCHIDACEAE (Orchid Family)															
Calypso bulbosa	Calypso Orchid						+	+					+		+
Corallorhiza striata	Striped Coral-root Orchid						+								
C. trifida	Pale Coral-root Orchid						+								+
Cypripedium calceolus	Yellow Lady's-slipper						+				+				+
Habenaria viridis	Bracted Bog Orchid						+								
Listera borealis	Northern Twayblade														+
SALICACEAE (Willow Family)															
Populus balsamifera	Balsam Poplar						+				+				
P. tremuloides	Aspen						+				+				
Salix arctica	Arctic Willow						+								
S. bebbiana	Beaked Willow														+
S. glauca							+								
S. myrtillifolia							+								+
Salix spp.	Willows				+	+									
BETULACEAE (Birch Family)															
Alnus crispa	Green Alder						+							+	
Betula occidentalis	Water Birch						+								
B. pumila	Swamp Birch														+
Corylus cornuta	Beaked Hazelnut														+

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SANTALACEAE (Sandalwood Family)															
Comandra pallida	Pale False Toadflax	+	+	+	+	+	+		+	+	+	+			+
Geocaulon lividum	Northern False Toadflax				+		+	+							+
POLYGONACEAE (Buckwheat Family)															
Eriogonum flavum	Yellow Umbrella-plant		+	+		+			+						
Rumex venosus	Veined Dock, Wild Begonia			+											
CHENOPODIACEAE (Goosefoot Family)															
Atriplex nuttallii	Salt Sage			+											
Eurotia lanata	Winter Fat			+											
CARYOPHYLLACEAE (Pink Family)															
Arenaria lateriflora	Broad-leaved Sandwort						+					+			+
A. rubella							+								
Arenaria spp.	Sandworts								+						+
Cerastium arvense	Field Chickweed	+	+	+		+	+	+	+	+	+	+			
C. vulgatum	Mouse-ear Chickweed														+
Stellaria longifolia	Long-leaved Chickweed														+
S. longipes	Long-stalked Chickweed						+	+				+			+
RANUNCULACEAE (Crowfoot Family)															
Actaea rubra	Baneberry						+		+	+	+				+
Anemone canadense	Canada Anemone				+	+			+		+		+		+
A. multifida	Cut-leaved Anemone		+	+		+	+	+	+	+					+
A. parviflora	Northern Anemone						+	+							+
A. patens	Prairie Crocus	+				+	+	+	+	+	+	+	+		+
Aquilegia brevistyla	Blue Columbine														+
Caltha palustris	Marsh Marigold								+		+			+	+
Clematis verticellaris	Blue Clematis						+	+	+		+				
Coptis trifolia	Goldthread														+
Ranunculus abortivus	Small-flowered Buttercup					+									+
R. acris	Tall Buttercup						+				+				
R. cardiophyllus	Heart-leaved Buttercup				+	+	+	+	+						

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RANUNCULACEAE (Crowfoot Family) continued															
Ranunculus cymbalaria	Creeping Buttercup			+	+				+		+	+			
R. glaberrimus	Early Buttercup									+					
R. rhomboideus	Prairie Buttercup					+					+	+			
R. sceleratus	Celery-leaved Buttercup										+	+			
Ranunculus sp.	Buttercup													+	
Thalictrum occidentale	Western Meadow Rue										+				
T. venulosum	Veiny Meadow Rue	+				+	+		+	+	+	+		+	+
FUMARIACEAE (Fumitory Family)															
Corydalis aurea	Golden Corydalis						+	+	+		+			+	+
C. sempervirens	Pink Corydalis														+
CRUCIFERAE (Mustard Family)															
Arabis divaricarpa	Purple Rock Cress						+								+
A. hirsuta	Hairy Rock Cress						+								
A. holboellii	Reflexed Rock Cress					+									+
A. nuttallii	Nuttall's Rock Cress						+								
Arabis spp.	Rock Cress									+					
Braya humilis	Braya						+								
Capsella bursa-pastoris	Shepherd's-purse										+	+			
Cardamine pensylvanica	Bitter Cress						+								
Conringia orientalis	Hare's-ear Mustard			+											
Descurainia sophia	Flixweed, Tansy Mustard			+			+								
Draba aurea	Golden Draba						+								
D. cana	White Draba						+								
D. nemorosa	Yellow Draba						+					+			
Erysimum asperum	Prairie Rocket														
E. cheiranthoides	Wormseed Mustard					+									
E. inconspicuum	Small-flowered Rocket			+			+		+						
Lesquerella arenosa	Bladder-pod			+		+			+						
Physaria didymocarpa	Double Bladder-pod						+	+							
Thlaspi arvense	Stinkweed			+			+	+			+	+			+
CRASSULACEAE (Orpine Family)															
Sedum rosea	Rose-rooted Stonecrop						+								

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SAXIFRAGACEAE (Saxifrage Family)															
Chrysoplenium iowense	Golden Saxifrage														+
Heuchera cylindrica	Alum-root								+						
Mitella nuda	Bishop's Cap, Mitrewort														+
Ribes americanum	American Black Currant										+	+			+
R. aureum	Golden Currant			+											
R. glandulosum	Skunk Currant														+
R. hirtellum	Wild Gooseberry														+
R. hudsonianum	Wild Black Currant						+	+			+				+
R. oxyacanthoides	Wild Gooseberry														
R. triste	Wild Red Currant														+
Saxifraga bronchialis	Spotted Saxifrage						+								
S. oppositifolia	Purple Saxifrage						+								
ROSACEAE (Rose Family)															
Amelanchier alnifolia	Saskatoon	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Dryas drummondii	Yellow Dryad						+	+							
D. hookeriana	White Dryad						+								
Fragaria virginiana	Wild Strawberry	+			+	+	+	+	+	+	+	+	+	+	+
Geum triflorum	Three-flowered Avens	+		+		+	+	+	+	+	+	+			
Potentilla anserina	Silverweed			+	+	+	+		+		+	+			
P. concinna	Early Cinquefoil	+				+	+		+		+				
P. fruticosa	Shrubby Cinquefoil						+	+			+				+
P. nivea	Alpine Cinquefoil						+								
Prunus pensylvanica	Pin Cherry						+		+				+	+	+
P. virginiana	Choke Cherry	+	+	+	+	+	+		+	+	+	+			+
Rosa acicularis	Prickly Rose						+							+	+
R. arkansana	Prairie Rose			+											
R. woodsii	Common Wild Rose			+							+	+		+	
Rosa spp.	Wild Roses								+	+					
Rubus acaulis	Dwarf Raspberry						+	+						+	+
R. chamaemorus	Cloudberry														+
R. pubescens	Dewberry						+			+	+	+	+		+
R. strigosus	Wild Red Raspberry						+							+	
Crataegus chrysocarpa	Hawthorn					+									

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LEGUMINOSAE (Pea Family)															
Astragallus aborigonum	Indian Milk Vetch						+								
A. agrestis	Field Milk Vetch											+			
A. bisculcatus	Two-grooved Milk Vetch			+							+				
A. crassicarpus	Ground Plum					+					+				
A. drummondii	Drummond's Milk Vetch			+					+						
A. goniatus	Purple Milk Vetch										+				
A. missouriensis	Missouri Milk Vetch			+											
A. pectinatus	Narrow-leaved Milk Vetch			+		+					+				
A. striatus	Grooved Milk Vetch			+					+						
A. tenellus	Loose-flowered Milk Vetch			+											
Astragallus spp.	Milk Vetches				+				+		+				
Caragana arborescens	Common Caragana										+	+		+	
Hedysarum alpinum	Alpine (American) Hedysarum					+									
H. boreale	Northern Hedysarum			+											
H. mackenzii	Mackenzie's Hedysarum					+	+		+		+				
H. sulphurescens	Yellow Hedysarum						+								
Lathyrus ochroleucus	Vetchling, Wild Sweet Pea				+	+	+		+	+	+	+			+
Medicago lupulina	Black Medick				+										
Oxytropis sericea	Early Yellow Loco-weed						+	+	+				+	+	
O. viscida	Sticky Loco-weed							+							
Psoralea esculenta	Indian Bread-root			+											
Thermopsis rhombifolia	Buffalo (Golden) Bean		+	+	+	+			+	+	+	+			
Trifolium dubium	Yellow (Hop) Clover			+											
T. hybridum	Alsike Clover														+
T. pratense	Red Clover														+
T. repens	White Clover				+							+			
Vicia americana	Wild Vetch		+	+	+		+							+	+
V. sparsifolia	Narrow-leaved Vetch					+			+		+				
GERANIACEAE (Geranium Family)															
Geranium robertianum	Herb-Robert														+
G. viscosissimum	Sticky Purple Geranium					+									

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yammuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
LINACEAE (Flax Family)															
Linum lewisii	Wild Blue Flax		+	+		+	+		+		+				
POLYGALACEAE (Milkwort Family)															
Polygala paucifolia	Fringed Polygala														+
P. senega	Seneca-root										+				
ANACARDIACEAE (Sumach Family)															
Rhus trilobata	Skunk-bush			+											
ACERACEAE (Maple Family)															
Acer glabrum (douglasii)	Mountain Maple						+								
RHAMNACEAE (Buckthorn Family)															
Thamnus alnifolia	Buckthorn														+
MALVACEAE (Mallow Family)															
Sphaeralcea coccinea	Scarlet Mallow			+					+						
VIOLACEAE (Violet Family)															
Viola adunca	Early Blue Violet	+			+	+	+	+	+	+	+	+	+	+	+
V. nephrophila	Bog Violet						+				+				+
V. nuttallii	Yellow Prairie Violet			+		+					+				
V. pedatifida	Crowfoot Violet											+			
V. renifolia	Kidney-leaved Violet						+	+							
V. rugulosa	Western Canada Violet	+				+	+	+	+	+	+			+	+
CATACEAE (Cactus Family)															
Mamillaria vivipara	Cushion (Ball) Cactus			+							+				
Opuntia polyacantha	Prickly Pear Cactus			+											
ELAEAGNACEAE (Oleaster Family)															
Elaeagnus commutata	Silverberry, Wolf Willow	+	+	+	+	+			+	+	+	+		+	+
Shepherdia canadensis	Canadian Buffalo-berry						+	+							

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yamnuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
ONAGRACEAE (Evening Primrose Family)															
Epilobium angustifolium	Common Fireweed														+
Gaura coccinea	Scarlet Butterfly-weed		+	+					+						
Oenothera caespitosa	Butte Primrose			+											
ARALIACEAE (Ginseng Family)															
Aralia nudicaulis	Wild Sarsaparilla								+		+	+			+
UMBELLIFERAE (Carrot Family)															
Lomatium foeniculaceum	Prairie Parsley			+											
L. macrocarpum	Long-fruited Parsley			+					+						
Musineon divaricatum	Musineon			+		+									
Zizia aptera	Meadow Parsnip, or Heart-leaved Alexanders	+			+	+	+		+		+	+			
CORNACEAE (Dogwood Family)															
Cornus canadensis	Bunchberry, Dwarf Dogwood						+				+			+	+
C. stolonifera	Red-osier Dogwood			+	+		+		+	+	+	+		+	+
PYROLACEAE (Wintergreen Family)															
Pyrola asarifolia	Common Pink Wintergreen						+				+				
ERICACEAE (Heath Family)															
Andromeda polifolia	Bog Rosemary														+
Arctostaphylos rubra	Alpine Bearberry						+								
A. uva-ursi	Kinnikinnick, Bearberry						+	+		+				+	+
Chamaedaphne calyculata	Leather-leaf														+
Kalmia polifolia	Mountain Laurel														+
Ledum groenlandicum	Common Labrador Tea													+	+
Oxycoccus microcarpus	Small Bog Cranberry														+
Vaccinium caespitosum	Dwarf Bilberry						+								
V. myrtilloides	Blueberry														+
V. vitis-idaea	Bog Cranberry, Lingonberry														+

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yamnuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
PRIMULACEAE (Primrose Family)															
Androsace chamaejasme	Sweet-flowered Androsace						+								
A. septentrionalis	Fairy Candelabra					+	+	+			+	+			
Dodecatheon conjugens	Shooting Star						+								
D. radicatum	Shooting Star				+		+	+				+			+
Dodecatheon sp.	Shooting Star									+	+				
Glaux maritima	Sea Milkwort											+			
Primula incana	Mealy Primrose														+
P. mistassinica	Dwarf Canadian Primrose							+							
Trientalis borealis	Star-flower														+
GENTIANACEAE (Gentian Family)															
Menyanthes trifoliata	Buck-bean														+
CONVOLVULACEAE (Morning-glory Family)															
Convolvulus sepium	Hedge Bindweed			+											
POLEMONIACEAE (Phlox Family)															
Collomia linearis	Collomia														+
Phlox hoodii	Moss Phlox	+		+		+			+		+				
BORAGINACEAE (Borage Family)															
Cryptantha bradburiana	Cryptanthe			+											
Cynoglossum officinale	Hound's-tongue			+											
Lappula redowskii	Western Blue-bur			+											
Lithospermum incisum	Narrow-leaved Puccoon			+	+	+				+					
L. ruderale	Hoary Puccoon or Gromwell			+		+	+								
Mertensia paniculata	Tall Lungwort, Bluebells							+			+			+	+
LABIATAE (Mint Family)															
Moldavica parviflora	American Dragonhead														+
Monarda fistulosa	Wild Bergamot, Horse Mint		+												

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yamnuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
SCROPHULARIACEAE (Figwort Family)															
Castilleja miniata	Common Red Paintbrush						+	+							
C. raupii	Northern Pink Paintbrush														+
Collinsia parviflora	Blue-eyed Mary						+	+							
Penstemon albidus	White Beard-tongue			+											
P. nitidus	Smooth Blue Beard-tongue		+	+		+	+		+		+				
LENTIBULARIACEAE (Bladderwort Family)															
Pinguicula vulgaris	Common Butterwort							+							
RUBIACEAE (Madder Family)															
Galium boreale	Northern Bedstraw										+				
CAPRIFOLIACEAE (Honeysuckle Family)															
Lonicera dioica	Twining Honeysuckle						+		+		+				+
L. involucrata	Bracted Honeysuckle						+	+							+
L. tatarica	Tartarian Honeysuckle				+										
Symphoricarpos occidentalis	Buckbrush		+	+											
Viburnun edule	Low-bush Cranberry						+			+				+	+
V. trilobum	High-bush Cranberry								+		+		+		
ADOXACEAE (Moschatel Family)															
Adoxa moschatellina	Moschatel														+
VALERIANACEAE (Valerian Family)															
Valeriana septentrionalis	Valerian						+								
COMPOSITAE (Composite Family)															
Achillea millefolium	Common Yarrow			+							+				
Antennaria neglecta	Broad-leaved Pussytoes						+				+				
A. nitida	Small-flowered Pussytoes			+		+									
A. parviflora	Low Pussytoes						+	+							
A. pulcherrima	Showy Everlasting						+								
Antennaria spp.	Pussytoes, Everlasting								+	+					

FAMILY SCIENTIFIC NAME	COMMON NAME	Police Outpost Provincial Park	Writing-on-stone Provincial Park	Lethbridge	High River	Calgary	Mt. Yamnuska (near Exshaw)	Banff	Dry Island Provincial Park	Red Deer	Stettler & Buffalo Lake	Mirror	Grande Prairie	Beaverlodge	Ft. McMurray
COMPOSITAE (Composite Family) continued															
Arnica cordifolia	Heart-leaved Arnica						+	+						+	
Chrysopsis villosa	Golden Aster							+							
Crepis tectorum	Annual Hawksbeard											+			
Erigeron compositus	Cut-leaved Fleabane						+	+			+				
E. philadelphicus	Philadelphia Fleabane								+						
Gaillardia aristata	Brown-eyed Susan			+				+							
Hymenoxys acaulis	Butte Marigold			+											
H. richardsonii	Colorado Rubber-plant			+					+						
Matricaria matricarioides	Pineapple-weed														+
Petasites palmatus	Palmate-leaved Coltsfoot													+	+
P. sagittatus	Arrow-leaved Coltsfoot						+	+							+
Ratibida columnifera	Prairie Cone-flower			+											
Senecio canus	Prairie Groundsel		+	+		+	+	+							
S. congestus	Marsh Ragwort								+		+	+			
S. vulgaris	Common Groundsel					+									
Taraxacum ceratophorum	Dandelion														+
T. officinale	Common Dandelion			+	+	+	+	+	+	+	+	+	+	+	+
Townsendia sericea	Low Townsendia							+							
Tragopogon dubius	Goat's-beard			+					+						
Balsamorhiza sagittata	Balsam-root	+													

Total number of species 289

HIGHLIGHTS OF FALL BIRD MIGRATION, 1977

by Rudi Butot
81 Capri Ave., N.W., Calgary, Alta T2L OG9

August of 1977 was the coldest, cloudiest, and wettest since 1968, and the leaves started to take on their autumn colour by the end of the month. September continued as August had, but October brought lots of sunshine and pleasant temperatures. By the middle of November, winter set in, and temperatures plummeted to -25C. The dry cycle, as far as sloughs, potholes, and lakes were concerned, continued and, as a result, relatively small numbers of migrating waterfowl and shorebirds were reported. Following are highlights of fall migration.

One Arctic Loon was reported near Morley on 28 October. Over 2500 Western Grebes were seen near Namake on 2 October, with the last few reported from Milo, Calgary and Frank Lake on 6 November. Whistling Swan reports were relatively few, involving small numbers. No Trumpeters were reported. By far the largest Canada Goose flocks were reported from Calgary, where in early November numbers increased to near 1500, with thirty-odd still in town by 27 December. Two White-fronted Geese were also seen in Calgary on 5 November. The first Snow Goose of the fall migration was reported from Frank Lake on 28 August, and over 3000 on McGregor Lake and 112 on Frank Lake on 6 November were the last to be reported. Thousands of Mallards were still on these lakes on that date.

Sharp-shinned and Cooper's Hawks were well-reported this fall, with birds moving through in ones and twos during the end of August and all of September. The best Red-tail Hawk day was 18 September, when 8 were seen near Cochrane.

Ring-necked Pheasant and Gray Patridge reports were few. Shorebird sightings were also few, involving small numbers of birds. One Ruddy Turnstone was reported in Calgary on 16 August. The last few Willets were reported from Irricana on 13 July, certainly not an encouraging sign, and the last thirty-nine Marbled Godwits were reported near Milo on 28 August. Twenty-six Stilt Sandpipers were seen near Irricana on 27 August. The last twenty American

Avocets were reported from Namaka on 2 October. Wilson's Phalaropes were not reported from our area after 9 July. One Red Phalarope was reported near Milo on 28 August.

Last reports of Herring and California Gulls were from Calgary on 12 November. Ring-billed Gulls were last reported 12 November, Franklin's Gull 3 October. One Sabine's Gull was reported from Frank Lake on 4 September.

Northern Shrikes started arriving, in fair numbers, in our area after the middle of October, but the last Loggerhead Shrike reported was 9 July near Pakowki Lake. Loggerheads seemed to have been very scarce this summer in Southern Alberta.

The peak of migration of Wilson's Warbler in Calgary fell between 6 - 11 September. Yellow-rumped Warbler reports of from 40 to 100 birds were made during the stretch from 8 - 25 September, with the last reported on 10 October.

No Red-winged Blackbird reports were received for most of the summer and fall. The scarcity probably should be attributed to the fact that most of its habitat had dried up in our area.

Evening Grosbeaks started to arrive in large numbers during the middle of October, while Pine Grosbeaks arrived during the first two weeks of November. A late American Goldfinch was reported from Calgary on 5 November. Redpolls, in flocks of up to 500, were in southern Alberta by the third week of November. Snow Buntings, in the hundreds, were reported from the Lamond and Mazeppa area during the second week of November.

More detailed tabulations for the fall period can be found in the fall and early winter issues of The Calgary Field Naturalist.

RECENT PUBLICATIONS ON THE NATURAL HISTORY OF ALBERTA (25)

Compiled by David M. Ealey, Dept. Zoology, University of Alberta, Edmonton, Alberta.

Anonymous. 1978. What about the coyote? Can. Wolf Defenders Newsletter. Nov.-Jan. 1978. p. 8-10.

Anonymous. 1978. Buffalo, wolves and man. Can. Wolf Defenders Newsletter. Nov.-Jan. 1978. p. 11-13.

Audubon of America. 1978. Albert Karnoven - Alberta's Naturalist - Wilderness Alberta. Calgary Field Nat. 9(6): 160-162.

Barrett, M.W. and G.A. Chalmers. 1977. Clinochemical values for adult free-ranging pronghorns. Can. J. Zool. 55(8): 1252-1260.

Battrum, M.W. 1978. Natural history observations - other than birds. Calgary Field Nat. 9(6): 157-159.

Boag, D.A. 1977. Summer food habits of Golden Eagles in southwestern Alberta. Can. Field-Nat. 91(3): 296.

Bulmer, B. 1977. Feeding our winter birds. Edmon. Nat. 5(8): 18.

Bulmer, B. 1977. Common Nighthawk nesting observations. Edmon. Nat. 5(8): 19.

Butot, R. 1978. Natural history observations - birds. Calgary Field Nat. 9(6): 153-156.

Calverley, B.K., and D.A. Boag. 1977. Reproductive potential in parkland- and arctic-nesting populations of Mallards and Pintails. Can. J. Zool. 55(8): 1242-1251.

Campbell, R. 1977. The Mackenzie-Amazon interplay helps to sustain the Earth's vital biosphere. Can. Geog. Journ. 95(3): 30-39.

Ebel, G.R.A. 1977. Bird observations, April 1977. Edmon. Nat. 5(8):

Edwards, R.Y. 1978. Edmonton goes back to nature. Nature Can.7(1): 41-43.

Gates, C.C. and W.M. Samuel. 1977. Prenatal infection of the Rocky Mountain Bighorn Sheep (Ovis c. canadensis) of Alberta with the lungworm Protostrongylus spp. J. Wildl. Dis. 13(3): 248-250.

Geist, V. and R.G. Petocz. 1977. Bighorn Sheep in winter: do rams maximize reproductive fitness by spatial and habitat segregation from ewes? Can. J. Zool. 55(11): 1802-1810.

Herrero, S. and D. Hamer. 1977. Courtship and copulation of a pair of grizzly bears with comments on reproductive plasticity and strategy. J. Mammal. 58(3): 441-444.

Krause, D.W. and B.G. Naylor. 1977. Range of the Bushy-tailed Wood Rat Neotoma cinerea) in Alberta. Can. Field-Nat. 91(3): 323-324.

Lore, M. 1978. Parks for tomorrow coalition (text of a speech presented in Banff, Oct. 1977). Nature Can. 7(1): 17-19.

McNicholl, M.K. 1977. Measurements of Wilson's Warblers in Alberta. N. Am. Bird Bander 2(3): 108-109.

Meredith, D.H. 1977. Nature centre notes. Edmon. Nat. 5(8): 13.

Meredith, D.H. An extra-limital record of the Bushy-tailed Wood Rat. Edmon. Nat. 5(8): 14-15.

Muir, J.A. 1977. Dwarf mistletoe seed dispersal and germination in southwestern Alberta. Can. J. Forest Res. 7(4): 589-594.

Penney, D.C., M. Nyborg, P.B. Hoyt, W.R. Rice, B. Siemens, and D.H. Laverty. 1977. An assessment of the soil acidity problem in Alberta and northeastern British Columbia. Can. J. Soil Science. 57(2): 157-164.

Poll, D.M. 1977. Alberta Animal Record Card summary. Edmon. Nat. 5(8): 19-20.

Richmond, R.J., R.J. Hudson, and R.J. Christopherson. 1977. Comparison of forage intake and digestibility by American Bison, Yak and cattle. Acta Theriol. 22(14): 225-230.

Schalkwyk, L. 1977. Ode to the poplar. Edmon. Nat. 5(8): 15-17.

Seddon, J. 1978. Junior Field Naturalists trip to Horseshoe Canyon on Saturday, Oct. 22. Calgary Field Nat. 9(6): 159.

Stelfox, J.G. and H.G. Vriend. 1977. Prairie fires and pronghorn use of cactus. Can. Field-Nat. 91(3): 282-285.

Stiles, A. 1978. My bluebird Trail report. Part two. Calgary Field Nat. 9(6): 156.

Thormin, T. 1977. September / October bird sightings. Edmon. Nat. 5(8): 20-21.

White, M. Field trip to C.W.S. Raptor Breeding Station at Wainwright. Edmon. Nat. 5(8): 12.

Williams, N.A., B.K. Calverley, and J.L. Mahrt. 1977. Blood parasites of Mallard and Pintail ducks from central Alberta and the Mackenzie delta, Northwest Territories. J. Wildl. Dis. 13(3): 226-229.

Wisely, A. 1977. E.N.H.C. Field trip to Beaverhill Lake. Edmonton Nat. 5(8): 12.

Wright, R. 1977. Yellowhead Pass: A new appreciation. Can. Geog. J. 95(3): 6-13.

LETTERS TO THE EDITOR

"Enclosed please find my membership renewal fee of $4.00 to the Federation of Alberta Naturalists.

I find the "Alberta Naturalist" a fine publication that is both informative and entertaining and hope you will keep up the good work."

Yours truly,
William G. Haras.

"Enclosed is my subscription to the Alberta Naturalist. Your efforts at Conservation make interesting reading and have an all too familiar ring. Not so, however, do lawsuits against the Crown for their negligence in control of bears - that does seem a far-away world in London."

Yours faithfully,
A.S. Thorley.

"In the latest issue of Alberta Naturalist (7:4) K. Wood wrote the article'More Notes on Attracting Birds.' In it he advised bird-feeder owners on ways of removing Starlings, House Sparrows and Magpies from their area, to the point of suggesting the kind of trap to use. That bothers me a great deal and it should bother other Alberta naturalists too.

As naturalists we are concerned that the general public develop a greater awareness of the environmental values we cherish. That we advocate the killing of wild creatures for our convenience and whim (i.e. we prefer to see only certain species at our feeders) is hardly a positive incentive towards increasing that greater environmental awareness we wish to see develop within us and others.

One can appreciate (and almost sympathize) with the author's condemnation of House Sparrows and Starlings, except for the fact that it contradicts one of our most basic values as naturalists. Regarding Magpies, however, I feel his remarks were quite out of line. These birds are a natural and native part of prairie fauna which has suffered under misconceptions and myths regarding its 'black character' for many years.

We must avoid identifying 'good' animals as opposed to 'bad' animals. If we can't do this, who are we, in all honesty, to deplore the destruction of coyotes, Golden Eagles, Timber Wolves, Cougars . . . and many others . . . by people who sincerely feel that such animals are "bad"? Animals are animals are animals, Period. As naturalists, we should enjoy and appreciate them all for their own sakes; if we can't do even this, what hope do the "inconvenient" animals of our world have?"

Sincerely,
Daniel F. Brunton
Box 757,
Canmore,
Alberta TOL OMO

FAN NEWS

1977 Summer Field Trip.

John M. Powell.

On the weekend of July 16-17, the newest natural history club in the Province, the Trumpeter Swan Naturalists Club of the Grande Prairie area, hosted members of FAN at a summer get-acquainted session in the Saskatoon Lake Provincial Park area. The park itself is interesting to explore and provides some good birding. The wet weather on this occasion put a slight damper on the activities, but the few who made the trip from the south enjoyed the area and hospitality provided especially by the MacAlisters, Craigs, and Andersons.

Highlights of the weekend were of course the trumpeter swans seen on several lakes in the area including at Saskatoon Lake Provincial Park where a pair paraded their two cygnets on the large sanctuary lake. At the MacAlister's farm, where Lloyd Lohr and the Powells were treated to welcome meals, we saw and photographed a family of white-breasted nuthatches that frequented one of the several bird feeders, along with other regular visitors. Side trips were also made to the banks of the Wapiti River in Pipestone Creek Park where a large colony of bank swallows was seen. This park which includes an Indian cemetery gets its name from the Indians who camped and made pipes from the clay of the creek banks since at least the early 1800's. On Saturday evening we were treated to two movies of the Kakawa area in different seasons given by Gavin Craig, while his wife Ellen provided coffee - and the rain came down in sheets outside.

The Trumpeter Swan Naturalists seem to be off to a good start. Their activities are reported in a regular newsletter and they get some coverage from the two local newspapers. We hope they will soon officially join the Federation as a club so that we can all benefit together from the association.

CLUB NEWS

Lethbridge Naturalist Society News

Recently we learned that a Restricted Development Area has been declared for the Old Man River Valley within the Lethbridge City Limits and that gravel leases in the river within City limits will not be renewed. Our society spent many hours in cooperation with other groups and citizens battling proposed developments in this area. This past summer a road through our Nature Reserve leading to gravel in the river was to be reopened. Thus we are pleased to learn that the government decisions were in our favor, that the many letters and presentations were not in vain.

This year the LNS took part in a Christmas Bird Count in Waterton National Park as well as doing its own in the Lethbridge area. The weather cooperated on both days and the turn out of bird counters was good. In Lethbridge, 11 areas were covered, and a total of 3273 birds seen. The members who accepted the invitation from Park Personnel enjoyed the day in the Park. Two members covered their area on skiis. A total of 171 birds was counted.

We are now back to our regular monthly meetings after the Christmas break and are looking forward to an exciting slate of programs. In January we enjoyed a fascinating talk by Mr. John Campbell who does research on rearing raptors in captivity for return to the wild.

Our summer outings are being planned and it should prove to be an interesting summer.

Please note our address is Lethbridge Naturalists Society
c/o Lynn Richards
General Delivery
Lethbridge, Alberta T1J 3Y2.

Our new executive:

Pres.	Duncan Mackintosh	1919 9th Ave., S.	327-5466
V. Pres.	Mike O'Shea	616 20 St., S.	328-0868
Treas.	Mary Roberts	2129 18 Ave., S.	327-4710
Secr. recording	Diana Williams	610 32 St., S.	328-0036
Secr. corresponding	Mary Baily	2303 20 Ave., S.	328-0088
Directors	Lynn Richards	Gen. Delivery	328-7573
	Doris Rhodes	504 7th Ave., S.	327-4983
	Teresa Dolman		
Directors to FAN	Mary Baily		
	Mike O'Shea		

(Editor's Note: Hello, out there . . . where are you, corporate member clubs from the rest of the Province??).

OVERHEARD (73)

Naturalists' terror

"Man's ability and readiness to thoughtlessly manipulate his surroundings with utter disregard for future effects is indeed frightening to contemplate."

W. Ray Salt and Jim R. Salt, 1976.
"The Birds of Alberta", p. 97.

OVERHEARD (74)

Flycatchers

"Some of us are beginning to get the sneaking suspicion that maybe the local populations of Willow and Alder were somehow not notified they are separate species."

Dr. James Haw, 1975.
American Birds 29: 981.

FEDERATION OF ALBERTA NATURALISTS SPRING WEEKEND OUTING. SAT. MAY 20 - 11:00 a.m. to MON. MAY 22 - NOON.

Co-ordinators: JIM MINTY CFNS - 249-4574
MARY LORE CFNS - 289-6453

LOCATION: UNIVERSITY OF CALGARY - BIO-SCIENCES AREA - North side of the University. Follow University of Calgary road signs from 16 Ave. N.W. or No. 1 highway, follow signs to east campus and to north campus side AND follow the F.A.N. SIGNS WITH ORANGE STREAMERS.

FIELD TRIP DEPARTING FROM PARKING LOT AT 11:00 A.M. BRING LUNCH.

F.A.N. EXECUTIVE MEETING Room 211 - Bio Sciences Bldg. - 11:00 A.M. BRING LUNCH.

EVENING: MEET AT "ANDY'S RESTAURANT @ 6:00 P.M. - Evening meal.
" 8:00 P.M. - Room 211 - Bio Sciences Bldg. PROGRAM

SPECIAL GUEST FROM INDIAN HEAD, SASKATCHEWAN -
LORNE SCOTT, Naturalist
Farmer
Photographer
Wascana Park

1-1/4 hr. program "BOTANY, BIRDS AND MAMMALS OF SOUTHERN SASKATCHEWAN"

and

"BRING BACK THE BLUEBIRDS" **** (excellent pictures and story of Bluebirds, nest boxes and predator problems - Excellent)

NATURE AND ART DISPLAY IN ROOM 211 (???)

9:30 P.M. REFRESHMENTS AND SOCIAL HOUR - Calgary Field Naturalists as hosts.

SUNDAY 6:00 Early Morning Birding with Jim Minty and Andrew Slater.

9:30 DEPARTURE FROM north side U/C. parking lot for all day trip to A SECTION OF WILDERNESS LAND - BROWN-LOWERY where we will hike, identify flowers, birds and pacify the bears. Lunch somewhere in Brown Lowery without the bears. Finish trip along the Highway River Valley and back to Calgary by 5:00 p.m. or High River-Lake McGregor-Carseland.

Dinner on your own or with C.F.N.S. hosts.

8:00 p.m. Evening free on an hour's walk in Fish Creek Park.

MONDAY 6:00 Early morning Birding.

9:30 a.m. Field Trip to noontime or 1:00 p.m. and return home.
9:30 a.m. Visit a Cave! Bring old clothes and a flashlight.

ACCOMMODATION: Three campgrounds on Highway No. 1 West of the City Limits. K.O.A. South of Highway.
Sunalta and Happy Valley on North side of highway closer to the Bow River.
One campground on No. 2 Highway north of city limits in the Balzac area.
Rates: $5.00 up depending on services required.

MOTELS: Motel Village, N.W. Calgary - your choice
Restaurants nearby in this area.
Prices $22.00 for two and up.

(Information can be obtained from M. Lore, 1621-4 St., N.W., Calgary, T2M 2Z1).

PRESIDENT'S PAGE

1977 has not been a spectacular year for F.A.N., we have made no great gains but we have progressed steadily throughout the year. We have been involved with all the major conservation issues and we have not missed an opportunity to put forward our views on government actions affecting the environment, however unwelcome our comments may have been.

I think the naturalists of this Province are becoming respected as a determined and united group, capable of operating alone or allied with other organizations as the need arises. We have formed close ties with other like-minded groups such as the Alberta Wilderness Association, The Sierra Club, The National and Provincial Parks Association and The Alberta Fish and Game Association.

1977 was a year of environmental crises and environmental groups were forced to join together and form coalitions to deal with some serious issues. The Committee for Environmental Public Participation was formed to try to stop the dismembering of the E.C.A. The Parks for Tomorrow Protest march in Banff was also supported financially and bodily by F.A.N.

Representative on Committees

Our political activities have brought more publicity to F.A.N. consequently, we are becoming better known in Alberta, this coupled with a great deal of lobbying has resulted in our being represented on several new committees.

John Powell, continues to sit on two E.C.A. committees, one of which he chairs, he also sits on the Fish and Wildlife Advisory Council and we are represented on the Cooking Lake Management Committee, the Clifford E. Lee Nature Preserve and the Problem Wildlife Committee.

Although we have become more politically oriented than some naturalists would wish, provincial agencies and other groups are recognizing an organization as a sounding board and a source of knowledge and wise council.

Membership

Our major limitation is our low membership and this is my greatest concern at the moment. Our membership has not increased significantly over the past years. Our most urgent need is for a Province wide membership campaign. F.A.N. has a potential far above the present 500 member figure. I hope my successor will be able to devote sufficient time to this most pressing problem but I believe this task is sufficiently important and enormous to be above the scope of the present voluntary Board. I strongly suggest that F.A.N. enlist the help of a professional organization to over-come this serious problem.

Corporate Members

Our corporate membership has now increased to nine with the addition of the Alberta Speleological Society on a trial basis only. As this club is already a Provincial organization with aims and objectives slightly different from those of most naturalists groups, it was decided that a trial membership would give both parties time to assess the mutual benefits of this liaison. Perhaps FAN should now be thinking about an Associate Membership category for such groups.

The Trumpeter Swan Naturalists from Grande Prairie have applied for membership in the Federation. We still need more clubs in the southern part of this Province, unfortunately, we can't seem to arouse any interest in the Medicine Hat area.

Standing Committees

Publicity - FAN lost one of its most dedicated and dynamic directors this fall, when Helen Schuler, Chairman of the Publicity Committee passed away after a lengthy illness. As well as being one of our most active members, she was also a dear friend to many of us who worked with her.

Environmental Education

This committee has really become active under the Chairmanship of Mary Lore. She carried out a very successful essay competition last year and she is making plans to repeat it this year.

Research

Charley Bird is acquiring much interesting information with his annual Plant Phenology Study.

Wilderness Parks and Natural Areas

Mike McIvor has supplied me with a great deal of material over the past year.

Publications

The Alberta Naturalist suffered a setback when Editor, Martin McNicholl left the Province. Virginia Lang has nobly come forward and filled the gap until we can locate a permanent Editor. The Alberta Naturalist is FAN's greatest means of publicity and we must be careful to keep it a high quality publication.

In order to maintain good communication with the Editor, the executive and some of the Directors decided to establish an Editorial Committee consisting of John Powell, Graeme Greenlee and Pat Clayton. This committee will proof read each issue and deal with any problems of policy.

Projects

Provincial Bird

After four year of letter writing, the Alberta Government finally yielded and FAN can take the credit for our new Provincial Bird.

FAN Decals

After our success with the Great Horned Owl Crests, Jim Minty has purchased some stick-on decals depicting FAN's emblem.

Naturalist's Guide

FAN is continuing to work with the Provincial Museum and I believe the manuscript has now reached the printing stage.

Loren Goulden Award

Ray Salt received this award - 1977.

Briefs

John Powell wrote a history of FAN for the Alberta Fish and Game Association 50th Anniversary documenting the conservation movement in Alberta. John has traced the history of each of the Naturalist clubs in the Province and he has described the birth of the Federation.

Mike McIvor submitted a brief to the Minister of Indian and Northern Affairs, on the proposed Grasslands National Park. The Lethbridge Club wrote a statement on the Milk, Lost River Wilderness Park. I delivered a brief to the E.C.A. at the Red Deer River Dam Hearings in Red Deer and we endorsed the brief of the Pelican Portage Group. In addition, numerous letters were written to various governmental agencies, emphasizing FAN's concern on most environmental matters.

Delegates to Conferences

Mary Lore represented FAN at the C.N.F. conference in Regina; we were represented at the Alberta Fish and Game Association convention in Edmonton; several directors attended the Alberta Wilderness Association Convention and the Public Advisory Committee to the E.C.A., Annual General Meeting and I attended a week long E.C.A sponsored citizen participation conference in Banff.

Finances

Unlike our membership our finances have increased substantially and the Directors are now faced with the task of deciding how to use our excess of funds to the best advantage. I am sure each Director will have his own suggestions for the Treasurer. FAN received a total of $4,751.70 in Provincial grants over the past year. We are now contributing $1.00 per membership to the "Buck for Wildlife Fund". Now the sportsmen can no longer accuse the Naturalists of not caring about wildlife.

Meetings

Winter Meeting was held here at Camp Caroline. We conducted a Leadership Seminar with the help of Elizabeth Hall, Jim Butler and Dick Pharis.

Spring Meeting was held at Drumheller during the spring blooming season. Eldon Bruins Regional Wildlife Officer from Red Deer, talked about his proposal for a Wildlife Sanctuary in the Clear-water area.

Summer Meeting Only two Directors were able to visit the Trumpeter Swan Naturalists near Grande Prairie.

Fall Meeting took place at Lundbreck Falls. We listened to a program on the proposed 3 Rivers Dam and the value of irrigation in the Lethbridge region. We also visited the site of the proposed dam.

The Future

FAN has begun to reach out in many directions and it will continue to go wherever its Directors wish to take it. FAN's most pressing need is for elected Directors who are willing and able to contribute to the operation of this organization. They are not only expected to travel all over Alberta to attend meetings; that is the easiest part of their commitment, they are needed to help run the organization Anyone who accepts an assignment he cannot or will not fulfill, is stifling the Federation. It may have taken three or four years of lobbying to gain access to an important committee and all that work can be lost through a delegate who doesn't attend the meeting.

The voluntary Board of Directors now need some paid assistance. We have only been able to carry on because of the invaluable secretarial help of Lyman Matthews who receives a small honorarium. A provincial organization the size of FAN should be represented at meetings and conferences all over Alberta, more liaison should take place between FAN and the corporate member clubs, and this can only be accomplished by someone with more free time than a voluntary Director.

In Conclusion

I am honoured to have been the first female President of FAN. I don't think I have out-shone the men but at least I tried. My two-and-a-half years was also the longest term of office, perhaps a little too long. There have been times when I have found this position time consuming and onerous. My consolation has been the friendships I have made and the help and support I have received from the Directors and their wives. People like Diane McIvor who looked after me for a week in Banff and Margaret Powell, always ready with a bed and a meal whenever my husband and I arrived in Edmonton. I want to thank all of you and especially Lyman Matthews and his helper Elsie Kuyt who have taken care of all the routine jobs of the Federation.

I am optimistic that my successor will keep FAN going forward but I urge you all to assist him as much as possible so he doesn't become overworked and disillusioned.

Dorothy Broadbent,
President.

CONSERVATION NEWS

World Heritage Committee

A recent development in conservation circles has been the establishment of World Heritage Committee. Peter Bennett, in a recent article (What is the World Heritage Convention? Can. Geog. Journ. 95: 22-29. 1977) discussed the history of creation of this committee as a part of UNESCO in Nov. 1976. The purpose is to safeguard "the world's most significant cultural and natural heritage", in cooperation with national conservation organizations. The 15-member committee, which includes Canada, is now primarily involved in compiling a list of cultural and natural properties throughout the world which are of international importance, and which should be accorded some protection through such recognition. With regard to the natural properties, Mr. Bennett lists a few possible Canadian candidates

for nomination to the World Heritage List. These include the St. Elias Mountains, the Old Crow Flats (northwestern Yukon), the South Nahanni region in N.W.T., the Red Deer River badlands, the British Mountains (northern Yukon), Lancaster Sound, Prince Leopold Island, the Mackenzie Delta pingos, Alberta's Dinosaur Park and the Whooping Crane nesting grounds in Wood Buffalo National Park. With Canada's reputation as a world leader in cultural and natural conservation, it is likely that her role on the Committee will be to provide technical assistance and to help train conservation personnel.

David M. Ealey.

LEGISLATIVE PROTECTION FOR THE WHITE PELICAN AND DOUBLE-CRESTED CORMORANT IN ALBERTA

by
Steve Brechtel, Fish and Wildlife Division,
Wildlife Habitat Section, Edmonton, Alberta.

I am pleased to be able to report that subsequent to the encouragement of concerned individuals throughout the province, the Lieutenant Governor in Council has, at the request of the Honourable Al "Boomer" Adair, Minister of Recreation, Parks and Wildlife, enacted regulations pertaining to the designation and protection of endangered Wildlife in Alberta. Under the authority of The Wildlife Act, these regulations have designated both the White Pelican and the Double-crested Comorant as endangered species within the province. The exact wording of the legislation is included below:

ORDER IN COUNCIL 1178/77
THE WILDLIFE ACT
DESIGNATION AND PROTECTION OF ENDANGERED
WILDLIFE REGULATIONS

1 The following are hereby designated as endangered species:

(a) double-crested comorant (Phalacrocorax auritus);

(b) white pelican (Pelecanus erythrorhynchos)

2 (1) The following areas are established as prohibited access wildlife areas:

(a) the island in Lake Newell known as Pelican Island, township 17, range 15, west 4th meridian;

(b) the island in Namur Lake located in sections 35 and 36, township 97, range 17, west 4th meridian;

(c) the island in Wadlin Lake in township 100, ranges 10 and 11, west 5th meridian;

(d) the island in Beaverhill Lake in section 8, township 52, range 17, west 4th meridian;

(e) the island in the unnamed lake in sections 22, 23, 26 and 27, township 95, range 17, west 4th meridian;

(f) that portion of the island in Lower Therien Lake located in the northwest quarter of section 14, township 57, range 10, west 4th meridian;

(g) that portion of Lower Therien Lake located in sections 2, 3, 10 and 11, township 57, range 10, west 4th meridian.

(2) No person shall, between April 15th to September 15th, inclusive

(a) enter upon or approach within one-half mile of any prohibited access wildlife areas established under subsection (1), clauses (a), (b), (c), (d) and (e);

(b) enter upon any prohibited access wildlife area established under subsection (1), clauses (f) and (g).

As those familiar with these species realize, Pelicans and Cormorants are most sensitive to human disturbance during the spring and summer, when they gather on traditional lakes to nest and raise their young. During this period any disturbance on, or adjacent to a colony will frighten breeding birds off their nests and may cause the death of hundreds of young birds by exposing them to sun or chill, or causing the adult birds to permanently abandon the nesting island. Unprotected eggs and young birds are also exposed to avian predators such as California Gulls (Larus californicus) which are often found nesting on or near Pelican and Cormorant colonies.

This legislation protects these birds during the most sensitive period of the year by prohibiting all access on or near identified colonies.

It is the intent of the Fish and Wildlife Division that all colonies in the province receive the protection necessary to ensure their continued success. To this end, another submission will be made shortly, requesting similar protection for the remainder of the vulnerable colonies in the province.

If there is any question regarding the location and/or protection of a suspected colony, please contact your local Fish and Wildlife office.

PEREGRINE FALCON STAMP LAUNCHING

CAMP WAINWRIGHT

by Lyman A. Matthews
9209 162 St., Edmonton, Alta.

It was a special privilege to be asked to attend the ceremony at Camp Wainwright on January 18, 1978, to launch the Peregrine Falcon commemorative postage stamp. A souvernir album was to be presented to the Federation of Alberta Naturalists.

Canada Post provided a chartered bus for those who desired to use it.

The ceremony was held at the Officers' Mess Building on Canadian Forces Base Camp Wainwright, where Major Gentles welcomed the guests, and acted as master of ceremonies. Among the guests were MLA Charles Stuart of Wainwright, and Mayor Coleman of Wainwright, along with several Post Office and Canadian Wildlife Service representatives. Tony Ferguson, President of the Alberta Fish and Game Association was also in attendance.

The principal address was by Michael Landers, M.P., Parliamentary Secretary to the Minister of Environment. He also represented the then Postmaster General Jean-Jacques Blais, who was unable to be present.

After the ceremony, those interested were given an opportunity to visit the falcon breeding pens, as well as the outdoor birds, for the Gyrfalcons and Prairie Falcons. It was most interesting for those who had not seen the birds at close quarters. An excellent luncheon was provided for the guests at the Officers' Mess, and we returned to Edmonton well satisfied with the day.

We must not forget a special feathered guest of honour at the ceremony. He welcomed those in attendance in his own unique way. After the main ceremony and presentation of the souvenir albums, a young falcon raised in captivity was taken from its cage on a table, and placed on the hands of several VIP's to have pictures taken. The young bird at one point spread its wings wide, looked around, and uttered several very loud screeches. As Mr. Landers in his turn released the bird and returned to his seat, he quipped that he had another souvenir to take back home. One of the falcon's talons had left quite a good imprint on his hand, where it had taken a good firm grip.

This young falcon was a very special bird and was quite at home among all his spectators, as explained by Mr. Armbruster, of the Canadian Wildlife Service at Wainwright, the bird's handler. The falcon had been raised in captivity and had known only people, and quite naturally felt at home. Its mother was also raised in captivity and had been successfully released to the wild in 1975. The father was a wild Peregrine Falcon which had mated with the female bird released in 1975.

It is regrettable the media did not provide better coverage of the ceremony, particularly Mr. Lander's address. Following are highlights from his address:

". . . it occurred to me today that if my four children are to grow into adults with the same fond memories of nature that I treasure, then credit in part will have to go to the dedicated people of many disciplines who are finally getting through to industry, government and the general public that our environment can take only so much punishment.

They're showing us that unless we change our ways, man could simply destroy the earth and himself in the name of progress: it has taken time, and with mercury and DDT, there have been tragic milestones along the way.

Much of our present concern results from what we've seen happening to wildlife because of man's activities. We've cut down the woodlands and we've paved over the farmlands. We've drained the marshes and we've diverted the rivers. We've spread herbicide and pesticide on the land and buried poisonous substances under it. We've dumped human and industrial waste into the rivers, lakes and oceans.

We've converted wildlife habitat for our own purposes. We've poisoned some species with our chemicals. Now we look around us and we realize that many wildlife species have been eliminated and many others are threatened.

But man is part of nature, not merely a spectator. Some, like Rachel Carson, have reminded us that the threat to wildlife is an early warning signal of environmental danger to humans. Every time we tamper with life systems, or ecosystems, there are subtle effects that spread out to other ecosystems like the ripples from a stone tossed into a pond. Mercury in the water doesn't only harm the fish. Minimata has entered our vocabulary as a reminder of this grim truth.

Many regional and national non-government bodies such as conservation naturalists' organizations are actively helping to educate the public They also lobby for policies on a wide range of subjects like energy

conservation, land use, pollution, avoidance of waste, forestry, wildlife management and planned development in the Arctic.

But to me, one of the most heartening signs for the future lies in the success we've had in halting and reversing the march toward extinction among some species of wildlife. The example of the whooping crane is so well known that I don't need to say much about it here. It does prove, however, that given the funds and public support, we can prevent new names from being added to the roster of extinct species.

. . . Conservation efforts need funds and sometimes tough and controversial decisions. They can be truly effective only when they are backed by an informed and concerned public. Anything that can further that knowledge and concern will help to make our country a better place to live in for this and succeeding generations.

. . . We may not yet know all there is to know about the way one life system interacts with others. Yet I believe that most Canadians now realize that we live on a fragile planet, that we share the air, the water and the land with our fellow human beings and with other living things. That, at least, should teach us caution about how we meddle with our environment. That's a very good foundation for deeper understanding. Canada Post's endangered species postage stamps will help to spread this message. It makes me optimistic that my children will indeed be able to store up the memories of nature that I did.

Thank you."

LOGGERHEADNESS: The Polemics of environmental disputes are making resolvable differences irresolvable.

Aspen, Colo. - One of the great wonders of environmental work is how seldom anyone has wanted to sit down to settle a dispute. In other fields, usually mechanisms to adjust conflicts between disputants develop once the parties recognize that such conflicts are a permanent "fact of life". However, this has not happened

much yet with respect to environmental conflicts, particularly over construction projects. Why?

The explanation may lie in unrealistic hope by both sides that one side would soon realize the "error of its ways" and vanish, leaving the other free to prevail completely. However, neither side is vanishing or conceding. What is increasingly true is that each side can tend to checkmate the other for a while, either by delaying a project or keeping the other off balance with new proposals. What is more, politicians are increasingly wary of being forced to choose between them. They find few political rewards in making a decision that leaves both sides unhappy and blaming them. More and more, they are urging the parties to get together to resolve their disputes.

A number of problems have impeded progress, but the mood may be changing. For one thing, both sides have tended to assume that the issues have all been non-negotiable: industry has tended to assume that environmentalists oppose everything, while environmentalists have tended to assume that industry will never make any real concessions. With these attitudes, many disputes instantly become ideological: they become convenient battlegrounds over general belief systems.

This is unfortunate because many environmental disputes involve resolvable practical differences. My own experience suggests that half or more of all disputes over site-specific construction projects really involve only limited aims by environmentalists to gain mitigation. They want the location shifted or the size of the project scaled down, or they seek use of the best available control technology, or more amenities. But they may not be trying to defeat the project entirely. Sometimes, of course, they are opposed to the very idea of the project, but many times they are not.

The polemics of a dispute, however, make it difficult for the parties to reveal their ultimate aims and their final "bottom line" in any settlement. Thus, it is easy for the two sides to entirely misread each others' motives and intentions. In some cases, the vagaries of the contest produce strange results:

environmentalists have defeated projects on which they only really sought mitigation, while developers have been awarded permits for projects that they did not originally envision.

The lack of an orderly and timely process for resolving environmental disputes exacts a toll for both sides. The dispute can tie up human and financial resources on both sides far longer than either side wants. The delay often adds to a project's costs, sometimes allowing it to multiply many times. Usually, added costs are imposed by the mitigating measures, and the demands for mitigating measures tend to grow as the controversy blossoms.

A complicating factor in resolving such disputes is that most depend on the government for a final decision. Thus, most of them are really three-cornered contests, with the government not really acting as a mediator but as a superior third party with pretentions to wider knowledge and legitimacy than the other two parties.

The notion of sovereign immunity lingers on to produce a haughty attitude that the "government does not negotiate" with the governed. Thus, the government's presence in the equation becomes a problem: it does not serve as the mediator; its haughty attitude tends to make settlements even more difficult; and finally, real settlements cannot be reached without its occurrence.

Legitimating the parties is a basic point of departure in bringing them together. As long as the parties believe the others have no right to be involved and the government agency involved regards the parties as mere self-interest meddlers in the matter of government, there is little hope of serious negotiation.

However, it is in the interests of all concerned to be realistic. If the parties are in fact at an impasse, it is only realistic to recognize that fact. And if half or more of the disputes were resolvable, and there were to be a 50 per cent success ratio with settlements, then one-quarter of the present disputes might be settled on terms that both parties thought were advantageous. This would represent significant progress for both sets of interests and for society as a whole.

Too much is at stake both for industry and the environment for us to ignore the opportunities for timely agreement where it is

possible. It is time the parties got to know each other better and to start seriously looking for mechanisms to settle resolvable issues.

by Michael McCloskey, Executive Director of the Sierra Club
from the Brandon Sun, November 7, 1977.

NOTES AND NEWS

Southern Alberta Nature Art Show

By the time this goes to press the first Southern Alberta Nature Art Show will be a memory but a very warm one indeed.

Despite snow and appalling road conditions 95 artists and invited guests attended the opening reception. Since nature artists for the most part are solitary beings, when they do come together it is a time for companionship and the eager sharing of knowledge. This warmth and camaraderie was more than evident on the evening of January 28th. The dedicated and hobbiests, teens and umpteens alike put their heads together and discussed the nearly 80 works selected. Each exhibitor had looked at nature and captured his chosen subject in mediums ranging from pen and pencil, clay and stone, oil and water colour, wax and bronze, ectachrome and cibachrome to porcelain and wood. The topics extended from trees and fungi, mountains and prairie, coulees and creeks, animals and insects, flowers and stumps, weeds and seeds to rocks and sky moods. This astonishing array was put together by the Alexander Galt Museum from the southern part of the province only.

Perhaps the most exciting aspect to a show such as this is the surprise expressed by viewers when they discover a friend of long standing has been quietly working at a nature art. These hidden dedicated people are diligently labouring to record and preserve our natural heritage and they deserve to be shown. Congratulations to the Galt Museum.

by Mrs. H.R. White, #102, 3210 - 23 Ave. S., Lethbridge, Alta

Ministik Hills Field Study Centre

Ministik Hills Field Study Centre, situated 30 miles S.E. of Edmonton, is preparing for the 1978 season. In addition to its regular field program for schools, it is offering four weekend courses for adults this spring and summer, and one children's week. The dates are:-

May 5 - 7	Bird Weekend	leader - Chip Weseloh
June 2 - 4	Bird Weekend	leader - Chip Weseloh
June 23 - 25	Wildflower Weekend, sponsored by the Faculty of Extension, University of Alberta	
July 17 - 21	Junior Farm Camp	
July 28 - 30	Landscape and Nature Painting	leader - Jean Richards

For further information, please write to Dr. Lois Fenna, R.R. 2, Tofield, Alberta TOB 4JO.

Sweden enacts law against sprays

Sweden has become the first country in the world to enact legislation against most aerosol sprays on the ground that they may harm the planet's atmosphere.

The ban, which takes effect January 1, 1979, covers the thousands of hair sprays, deodorants, air fresheners, insecticides, paints, waxes and assorted sprays which use the freon gas (chlorofluorocarbons) as a propellant. It does not apply to certain medical sprays, especially those used by asthma sufferers.

Sweden, which uses only one per cent of the freons made in the world, obviously is not going to halt the threat single-handed, but it does believe in setting an example.

Loran L. Goulden Memorial Award

The third Loran L. Goulden Memorial Award for outstanding work on

natural history within the Province of Alberta was awarded to Dr. Charles D. Bird at the Annual Meeting of the Edmonton Natural History Club on January 10, 1978. Dr. Bird's own extensive contributions to the natural history of the province and his outstanding efforts in encouraging work by amateurs and in preserving natural areas form the basis for his recognition by this award. Further details will appear in the June 1978 issue of the Alberta Naturalist.

Martin K. McNicholl
Chairman, Loran L. Goulden
Memorial Award Selection Committee

Albertan Receives Queen's Medal for Conservation Activities

George W. Scotter was awarded the Queen's Silver Jubilee Medal as an expression of appreciation for exemplary service in conservation activities in Canada. Dr. Scotter is past president of the Canadian Nature Federation, a 25,000 member organization with a Canada wide base. He served as president during the most financially troubled times of its history and he was instrumental in reducing costs and increasing income of CNF. A now published symposium on "Canada's Threatened Species and Habitats" received major input from him during that interval. He also served as vice-president and director during the formative years of that organization.

He has also been active in the preservation of natural and semi-natural areas through the encouragement of new national parks, such as Nahanni National Park in the Northwest Territories, and through the Conservation of Terrestrial Biological Communities programme. He is partly responsible for the funding and establishment of the soon to be acquired natural area west of Edmonton, which is to be managed by local natural history and park groups.

Numerous environmental issues, such as Village Lake Louise and cattle grazing in national parks, have received his attention.

Dr. Scotter is employed by the Canadian Wildlife Service at Edmonton as Program Leader for Parks Research.

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The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Any material printed for the first time in the AN may be reproduced without permission. Credit lines will be appreciated. All opinions expressed are those of the authors concerned, and do not represent official F.A.N. policy except where stated.

Deadlines for submission of material are: January 15, April 15, July 15, and October 15. Please include your address. All maps and charts should be submitted on white paper, of the appropriate size for publication, preferably typed or in india ink. Black and white slides, photographs or drawings are welcomed.

FAN membership fees are: regular--$4.00 per year; supporting--$10.00 or more per year, with the excess over $4.00 being deductible from taxable income. Mail remittance to: Federation of Alberta Naturalists, Box 1472, Edmonton, Alberta T5J 2N5. All members now contribute to Bucks for Wildlife, as FAN now contributes $1.00 of each membership fee to this fund.

MEMBERSHIP APPLICATION FORM

Send to:

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Box 1472, Edmonton, Alberta T5J 2N5.

NAME _____ (please print)

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Lethbridge Naturalists' Society, c/o Lynn Richards, General Delivery, Lethbridge, T1J 3Y2
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